

THE AUTOMOBILE

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No. 17



THE first of the shows is in progress. It began this afternoon with a private view to members of the Automobile Club of America and their friends. To-night the general public was admitted, and came in overwhelming numbers to see what manner of cars are included in the 1908 productions of those makers who take no reckoning of the name Selden. With few exceptions, these "independents" are segregated under the banner of the American Motor Car Manufacturers' Association, and this organization supplies the backbone of the "Club" show in the Grand Central Palace. And it is a mighty reassuring backbone that the Reeves line-up presents, for it includes cars that range in value from the most reasonable-priced buggy type up to the heavyweight tourer which carries seven and can crowd in several more if required, and many want cars thus provided.

When one reminisces a bit and goes back to that corner in the bicycle show of the winter of 1898-'99, which contained all there was to illustrate to the public what was meant by "automobiling," it brings a startling realization of the progress of a great industry. Now Madison Square Garden is appropriated entirely by the Seldenites, while the Palace is filled from cellar to garret with the vehicles of the "independents." And in neither of

these exhibitions is the foreigner to be found this time. The products of European makers are to have a separate setting later on. All this in the short space of less than a decade, and we appear to be only on the threshold, for, in addition to the users of pleasure cars, the call for autocabs and autobuses and farmobiles is scarcely heeded, to say nothing of the other demands of the commercial vehicle field.

It is true that the replacement of the horse should be gradual, and not forced, but it is as certain as the rising of the sun on the morrow. The shows tell the story convincingly, and this exhibition of the "independents" indicates more the growth of the industry than does the event of the Seldenites, whose ranks are kept limited as a result of the policy followed. Not a few new names are to be seen in the Palace, and of those who were there a year ago all are present with few exceptions. It is inevitable that some will fall by the wayside in any field, but the causes belonged to the concerns individually and not to the industry itself.

The Motor and Accessory Manufacturers constitute a good barometer of the trade, and in the Palace their members are more numerous than ever before. Besides, there are those outside who sell things that figure in some way in the making of cars or their use. It is a big list.

The management of the "Club" show has never been extravagant in the matter of decorations, but it would take a good many thousands of dollars to give the Palace a dressing that would hide its ugliness. The futility of the effort may have caused the subject of decorations to have come in for even less attention than a year ago. An effort has been made for an autumn out-of-door effect, and the vari-colored foliage utilized partially



accomplishes what seems to have been desired. The green background of the past again fits into the picture, while the dark red floor covering blends into the scheme. The removal of obstructing partitions has improved the exhibiting spaces and one gets a better idea of the magnitude of the show.

October dates caused not a few exhibitors some difficulty in arriving at the Palace with a completed exhibit, and it is apparent that a fortnight or more might have been employed by some of the firms in bettering that which they show to the throngs of interested persons.

But contrast this for a moment with the result that would have met the first-nighters of a few years ago had an attempt been made to hold a show in October, or, for that matter, in December, as the average maker had to move heaven and earth to be able to come to a January show, usually after it was well under way, if half-empty floor spaces could constitute such a condition, and dragging his exhibit in with him much in the same manner as the farmer gets an unruly prize heifer before the judges of the county fair at the last moment. Instead of the forlorn-looking gaps in the line of exhibits that were seldom filled up until half the show week had passed—some of them not at all—long ranks of polished chassis and complete cars are to be seen in every direction.

If this were a complete representation of the entire American industry, it would indeed be an imposing sight, but when it is realized that, taken altogether, this immense aggregation of cars and sundries is but a part of the total, the mind can scarcely grasp the significance of it. It is next to impossible to take in the fact that practically all of these makers have come into existence in less than half a decade, and that every car in the great exhibition building is of American origin and construction.

And it is in this respect particularly that the present show at the Palace will go down into history as the first of its kind. In 1900 raking the entire metropolitan district and the outside territory included with a fine-tooth comb failed to materialize more than a mere handful of cars, but one or two freakish specimens of which could lay claim to being American. The remainder were of foreign make and the property of private owners. The latter soon dropped out of sight as supporters of automobile shows, but for several years thereafter the foreign makers formed the mainstay of every show held in the East, so that this first all-American really marks an epoch in the history of the home industry. Every one of this seemingly endless collection of cars of all sizes, types and prices is the creation of American skill and American material and they serve to show how completely the pupil has outgrown the master of but a few short years ago, for many of these cars have their counterparts running on foreign roads as the property of foreigners.

The unanimity with which all makers of cars above a certain size list permanently enclosed models also furnishes a strong contrast to the automobiles that formed the bulk of the exhibits but a few years ago, and accentuate very markedly the fact that the automobile is as much an all-the-year vehicle as the carriage.

Quite the most significant feature of the show, regarded from the point of view of the cars alone, is the collection of "buggyabouts" which are now brought together for the first time at any Eastern show. This indigenous product of the West has sprung into being in such a very short space of time, comparatively speaking, and it has been confined so closely to the home of its origin, that many here in the East do not realize its existence. Two years ago there were not more than two cars of this make being turned out regularly; now there are a dozen or more, and a new firm starts up every month. And this humble high-wheeler is destined to place an entirely new aspect on the pastime of automobiling, which can no longer be justly catalogued as such owing to the fact that a very large proportion of all the cars in use is employed as necessary means of transportation.

The bewildering array of accessory makers and dealers forms a fitting background to the great collection of cars and serves to give some idea of the vast amount of capital and labor involved in the manufacture of articles merely subsidiary to the car itself.

EVENTS DURING PALACE SHOW.

THURSDAY, OCT. 24:

2 P. M.: Private view of exhibition for A. C. A. members.

FRIDAY, OCT. 25:

Evening: Merchants' Night.

SATURDAY, OCT. 26:

Evening: New York City Officials' Night.

Evening: Smoker, Automobile Club of America.

SUNDAY, OCT. 27:

All Day: Open house at Automobile Club of America.

MONDAY, OCT. 28:

2 P. M.: Convention of Maxwell dealers, Murray Hill or Manhattan Hotel, to be followed by a dinner at 5:30 P. M.

Evening: Engineers' Night.

TUESDAY, OCT. 29:

1 P. M.: Second annual show luncheon of the American Motor Car Manufacturers' Association at Hotel Manhattan.

Evening: Society Night. Admission \$1, instead of 50 cents.

WEDNESDAY, OCT. 30:

10 A. M.: Meeting directors of Motor and Accessory Manufacturers, Inc., at Hotel Manhattan.

3 P. M.: Meeting A. M. C. M. A. Committee.

3 P. M.: Meeting A. C. A. Board of Governors.

7:30 P. M.: Dinner of Fairweather Club at Reisenweber's.

Evening: Military Night.

A. A. A. MEETINGS DURING THE SHOW.

WEDNESDAY, OCT. 30:

10 A. M.: Conference of representatives of A. A. A., N. A. A. M., A. L. A. M., A. M. C. M. A., and I. A. S., for the purpose of considering the advisability of automobile racing upon one-mile or less circular tracks, No. 437 Fifth avenue.

4 P. M.: Conference of representatives of A. A. A., N. A. A. M., A. L. A. M., and A. M. C. M. A., discussion of plans for the general good of automobiling, No. 437 Fifth avenue.

THURSDAY, OCT. 31:

10:30 A. M.: Meeting of Executive Committee A. A. A. Board of Directors.

3 P. M.: A. A. A. Legislative Convention to be held in Convention Hall of the Grand Central Palace (take elevator Forty-third street entrance). The meeting will be presided over by President William H. Hotchkiss and Charles Thaddeus Terry, chairman of the Legislative Board.

AERONAUTICS STRONG FEATURE AT PALACE.

Arrangements were made to make the aeronautical section of the Grand Central Palace automobile show the most complete ever held in this country. The Aero Club of America arranged for the presence of the entire Jamestown exhibit to be shown intact, and this was supplemented by two or three score individual exhibits not shown in the South.

In the balloon section there are ten fully equipped airships and balloons, including Dr. Thomas' *Nirvana*.

The dirigible balloons comprise Santos-Dumont's No. 9, lent by the Smithsonian Institution; C. J. Strobel's *Harry Cauldwell*, Captain T. S. Baldwin's *California Arrow*; Julian P. Thomas' *New York*; Captain T. T. Lovelace's *John Wetmore*, and Carl E. Myers' No. 23. Heavier-than-air candidates for the supremacy of the heavens comprise a number of novelties, mostly in models. Among those who contributed to this section are C. Buschner, with a land and water automobile; A. Reidlinger, of Germany, with a German drachen balloon; and model helicopters and aeroplanes by A. V. Wilson, L. H. Hall, Carl Hartman, Wm. Morgan, W. A. Eddy and W. R. Kimball.

CONCERNING THE FUTURE OF A GREAT INDUSTRY

By ALFRED REEVES, GENERAL MANAGER, AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION.

REPORTS from various parts of the country indicate excellent prospects for the sale of automobiles in 1908. It will not be an abnormal year, but it should be a very successful one for those dealers who practice ordinary business principles in the conduct of their business. While certain things have contributed to make this year an off one in the automobile trade in the East, the West has continued to be optimistic on the future. Of course, some cars have moved with comparative ease, while others have required some effort to be introduced.



ALFRED REEVES,
General Manager A.M.C.M.A.

Optimism is an excellent thing, but it must not warp our judgment in the careful consideration of the future. New York always discounts the future, and the West must soon feel the money stringency that has affected Eastern conditions for some time. In the opinion of conservative business men, this stringency and general let-up in trade has been an excellent thing, for it is generally admitted that the country has been overtrading and doing a larger business than its capital warranted. A few months easing will be the best thing that could happen, and particularly it is going to impress upon the mind of the automobile manufacturer that conservatism is a keynote worth sounding now and again.

The very bad weather of the Spring, tight money market, the very early shows, and the failure to run the Vanderbilt Cup race, have all affected trade somewhat, but these should all be on the favorable side next year. In my judgment, the first week in December, as we had in 1906, is the best time for shows, for it doesn't affect the Fall business, and yet it is early enough to give the manufacturer an opportunity to get his product out promptly for the Spring selling season.

In my opinion, business had been affected somewhat by the regretful efforts of certain factions in the trade in trying to require a dealer to handle only one make of car, or a car within the ranks of one association. An unbiased view of the situation will make clear to anyone that this has brought into the field

twice as many dealers as were necessary. They have had to pay twice as much rent, have had twice as many salesmen, and have had twice as much overhead expenses of every sort, with the natural result that comparatively few of them have made any money.

I feel confident that the successful dealers of the future will handle three or four different makes of cars in order to make profits commensurate with their investment. Of course this year the independent dealers have had all the best of trade, because they handled the small type of cars that were in such great demand. They have been aided, too, by the broad policy of the American Motor Car Manufacturers' Association, which has done a great deal of good work in the direction of agents. Next year should see a continued big demand for small cars, an excellent sale of the six-cylinders, and good field for the four-cylinders.

The commercial vehicle is receiving more attention, and those in that line, particularly the makers of the gasoline cars, should begin to receive the rewards due their early educational efforts.

A conservative and thoughtful view of the horizon may show a further elimination of weak concerns, but, if so, it will be on account of inability to raise capital, which has been the trouble with some of the companies that passed away during the present year.

For the good of the industry, there should be a continuation of hill climbs, track and road racing, economy tests, endurance runs, tours and shows, both local and national.



J. B. BARTHOLOMEW,
A.M.C.M.A. Show Committee.



WM. MITCHELL LEWIS,
A. M. C. M. A. Show Committee

INCREASING DEMAND FOR THE MODERATE-PRICED CARS

By BENJAMIN BRISCOE, CHAIRMAN A. M. C. M. A. COMMITTEE OF MANAGEMENT.



BENJAMIN BRISCOE,
Chairman A. M. C. M. A.

THE automobile business is passing through what I have always considered was an inevitable period in its existence, the differentiation period. I believe that the public who buy automobiles are fast coming to a realization of the fact that they can get automobiles that will do all that they require at a cost of \$2,000 and less, and while there will undoubtedly be some cars sold from \$2,000 and upwards, the proportionate yearly sale, as compared with the lowest priced cars, will steadily diminish.

In my estimation there will be three or four concerns whose cars will become standard as high-priced cars, and there will be a large number of concerns, of course, whose cars will become

standard as the moderate-priced cars. At the outside, I do not believe that there will be in existence over twenty automobile companies at the end of the next year whose business will be really worth while.

As to the demand for automobiles, I believe it will steadily increase; the increase, however, will be proportionately greater for the moderate priced cars.

When automobiling was new, and comparatively few people had them, and when they were bought by a great many people simply to let their neighbors know that they could own one, in other words, when the element of pride entered into the situation to a great extent, big, showy cars served the purpose better than cars of utility. Automobiles have now become so general, and in such common use, that one never raises his head to see who it is that is in the automobile, and so people have come to realize that what they want is a car that will *get there*, rather than one that will excite the envy of their neighbors.

The worth of the automobile has been impressed upon the minds of many who have yet to become owners.

SATISFACTORY RESULTS OBTAINED BY USERS GENERALLY

By H. O. SMITH, MEMBER OF A. M. C. M. A. SHOW COMMITTEE.



UCH talk has been going about as to the future of the automobile business. The statement that the automobile is a practical conveyance will probably not be challenged by those who are posted. Therefore it is a plain business proposition, and must be handled by business men on the same general basis as any other line. It will not stand abnormal and unwarranted expense any more than the average standard line.

If in some quarters the automobile business has proved unprofitable, while in others successes have been met with, there is no doubt a reason for both conditions. The automobile business, if it is in a healthy condition, should not afford more than a legitimate manufacturing profit. Abnormal profits tend to encourage extravagance and invite increased competition to such an extent as to make possible the danger of overproduction.

As in any other manufacturing line, in order to be successful it is not only necessary to have sound business management, but to produce on a manufacturing basis, and in no line is it more important that the product be of good design, proper proportions throughout, and carefully made, than in manufacturing automobiles, which represent a complete power plant to be placed in the hands of the masses for use over roads and rights of way as we find them.

The future of the automobile can only be determined by

the results obtained from automobiles in service. First cost, maintenance and results considered, it must compare favorably with any other means of transportation, if it is to be accepted as a practical conveyance, and if not, it is a fad, and, like all fads, will run its course and die.

The satisfactory results obtained by users generally of many of the recognized makes to-day are due evidence of the fact that the industry has entirely outgrown the experimental period, and has already reached the stage where its product is sure to find a steady and increasing demand, and that the automobile can be considered on the basis of economy and reliability.

There is probably no industry in America which in so short a time has assumed the enormous proportions of the automobile business to-day. We have passed through the developing period, during which many cars marketed were probably pronounced unsatisfactory, and justly, if attending conditions were not considered. However, the progress made in this country as it relates to volume of business and great strides toward the perfecting of a new proposition, is nothing short of marvelous, and it is not only reassuring, but a credit to the broad gauged engineers affiliated with the industry, to note the almost general adoption of certain fundamental and underlying principles.

Most of the practices employed in the modern motor cars are old in mechanics, and we have merely put them to new uses. It is hoped that we have outlived the time when an unknown and untried article can be sold on appearance. Buyers are becoming more discriminating each year and buying more intelligently, not on looks, but on what is in the car and its ability to stand up and make good. And any maker should not hesitate to give evidence of this ability in one form or another of contest.

THE RELATION OF RACING TO THE TOURING CAR

By J. D. MAXWELL.

AT the present time there is a strong feeling against racing automobiles on tracks, and perhaps this is justified in view of recent fatalities, but there is another side to the story. The big road races which are held abroad, and contests like the Vanderbilt Cup of last year, have always been great factors in developing the industry, and I do not believe it is putting it too strong to say that were it not for these contests the touring car would be far from its present state of perfection.

To the layman, racing and touring are totally divorced, yet as a matter of fact they are closely allied. The problems of building a successful racing car and a successful touring car are practically the same. There has never been a case where the designer who constructed a successful racing car has not been able to turn out a thoroughly reliable touring car.

Speed is a powerful factor for destruction, and how many cars do we see which give fairly good satisfaction under ordinary conditions and yet fall down when called upon for all that is in them. Every one who has championed racing has at some time or other come across a man "who never wanted to go more than twenty miles an hour—who does not want to race," etc. And while all that may be true, nevertheless the car built

by a manufacturer who has made good in the racing game is, I find, wanted even under the most adverse touring conditions.

It is interesting to look back for the past two or three years at some of the successful racing cars. They were almost without exception shaft driven. The effect of this on the trade is now evident by the fact that the majority of cars are adopting the shaft drive for 1908. Some of the problems which were worked out on several of the racing cars, as far back as 1904, are reflected in the latest 1908 models.

I do not wish to put myself on record as standing up for racing as it now exists, but I do believe that the best interests of the automobile business are served by the holding of some of the races of international importance.

The Long Island motor parkway, if ever completed, will solve this racing problem by making it possible to police the course, and thus make speeding as safe as it is possible to make it. Of course there are always dangers in traveling at such tremendous speeds, but I do not think the fatalities will be as great as those which we have every year from football, swimming, horseback riding, and kindred sports. There will be mishaps in all strenuous forms of competition, but these events will be held just the same.

Philadelphia, Oct. 21.—Borrowing a leaf from the books of the managers of the national shows, those at the head of the show of the Philadelphia Automobile Trade Association, at the First Regiment Armory, November 9-16, have decided to set apart Tuesday and Thursday nights of show week for "prospects," and admission fee will be raised to a dollar. "Society" is expected to respond in generous numbers.

The *Revue Commercial du Levant*, referring to the announcement that motor cars, which up to the present have been debarred from entering Turkey, are now authorized to do so with certain restrictions, points out that though good roads in the country are nonexistent the inhabitants will probably purchase cars which will have to be made solid on account of the inequalities of the road surface.

THE A. C. A. AND THE AUTOMOBILE INDUSTRY

By S. M. BUTLER, SECRETARY A. C. A.



COLGATE HOYT,
President A. C. A.

WHEN the Automobile Club of America was organized by a mere handful of men in 1889 a very small percentage of the American people had an idea of the enormous extent to which the automobile industry would grow. Even the few enthusiasts who did believe in the future of the self-propelled vehicle have not only seen their wildest fancies realized, but surpassed. But these few, in their wisdom, planned a campaign for the good of the many that was sufficient to provide for any emergency, and the club has prospered through steadfastness of purpose and meritorious action until it stands head and foremost in American automobiling with 1,500 members and the most complete club-

house and garage in the world. It is organization without a selfish purpose. "All for one and one for all" might well have been the motto of the Automobile Club of America.

Important has been the club's work in the fostering of the industry from a trade viewpoint by means of annual automobile shows, of which the exhibition in Grand Central Palace is the eighth yearly event. The initial show was planned when manufacturers and cars were few and the financial responsibility was correspondingly heavy. Individual members guaranteed the exhibit against loss and entered their private cars to fill up the more than ample amount of floor space.

From that year until the present the shows have been repeated under the club's management—not for gain, as profits are shared with the exhibitors—but merely to carry out the original plans of the organizers who saw so clearly into the future.

In a like manner healthy competition has always been fostered. The first parade occurred in January, 1899, with thirty-four horseless vehicles in line, including one bicycle and one delivery wagon. Turning west from Fifth avenue into 110th street, several vehicles fell out of line, being unable to negotiate the grade.

In the second run five of the steam machines ingloriously froze up en route.

In 1900 the first road race was held over a 50-mile course on Long Island, and was won by an electric vehicle, specially constructed, in 2 hours 3 minutes 30 seconds. The first long-distance club run was held in June of the same year from New York to Philadelphia with a stop at Princeton, N. J., for luncheon. Starting at 7:30 A.M., the winner arrived at the destination at 7:20 P.M.—the Bellevue-Stratford Hotel.

Nothing could better demonstrate the advance of the automobile than comparison with recent contests held by the Automobile Club of America. Sixty out of sixty-five starters finished in the two-gallon efficiency contest of

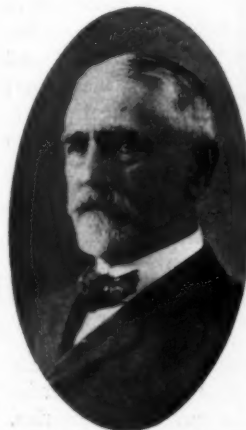


S. M. BUTLER,
Secretary A. C. A.

1906, the Franklin winning with a record of 87 miles on two gallons of gasoline. Another great stride was apparent last June, when forty-one cars tied with perfect scores in the Sealed Bonnet contest. Only forty-eight cars started, and each of those finishing covered 600 miles in the four days without making an adjustment of any kind. It was a wonderful record.

The end is not in sight. Wherever the infant industry, now grown into a lusty child, will profit by advice or assistance, the Automobile Club of America will be found smoothing over the rough places until the automobile world for owners and manufacturers alike shall indeed be a Utopia.

Somebody must do the work, and the A. C. A. is not shirking the task.



GEN. GEORGE MOORE SMITH
Chairman A. C. A. Show
Committee.

A PREDICTION AS TO THE FUTURE AUTOMOBILE

By GEORGE F. CHAMBERLIN, MEMBER A. C. A. SHOW COMMITTEE.

THE manufacturers have been so busy making cars for those willing to pay the prices and indulge in high speeds and luxurious fittings that they have quite overlooked the demand, now steadily increasing, for a reliable road vehicle at a price and cost of maintenance within reach of the farmer, the artisan, and others having moderate incomes.

The little runabouts, with their short, stubby base and small wheels, shod with expensive pneumatic tires, and their short-lived, high-speed engines, come far from meeting the real popular demand.

The "buggy type," now coming in ever-increasing numbers from the Middle West, is but an expression of the need that is felt by thousands; yet it but feebly represents an early step forward.

When the present mania for speed shall abate, when racing on

public highways is no longer tolerated, when sane owners shall refuse to burn up rubber to benefit the tire monopoly, and 25-cent gasoline to benefit the oil trust, then and not until then will be developed the type of vehicle meeting the urgent demands of that vast multitude which, satisfied with moderate speed, is anxiously looking for a car that shall be simple, safe, economical, and practical in all weather and on all roads open to traffic. Twenty years hence, when our roads shall have been generally improved, the present cars will be either objects of curiosity or consigned to the scrap heap.

What of the car of the future? Not the high-powered racing road locomotive, with its luxurious equipments, but one meeting the conditions as they shall be, with the road surfaces meeting the needs of a civilized community. Such a vehicle will surely involve more of a carriage and less of a locomotive.

Designers seem to have forgotten the freedom from conventional lines which the motor makes possible.

In the writer's opinion, the utility car of the future will have a most flexible frame, with long base, carried on wheels of exceedingly large diameter, shod with tires cushioned with either solid rubber or some cheaper substitute. The weight will be properly distributed, the motor to the rear and near the driving



GEORGE F. CHAMBERLIN,
A. C. A. Show Committee.

wheels. It will have long double springs of great flexibility, which will take up most of the vibrations and road shocks now thrust upon the long-suffering tire.

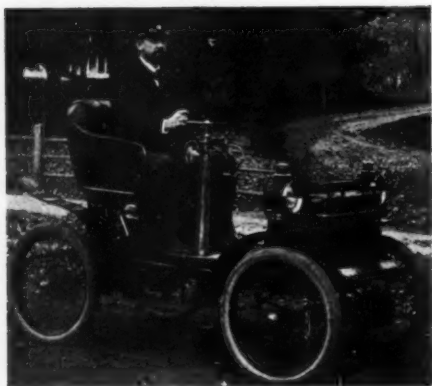
The motive power will be an improved, simple and light form of three-cylinder engine of a two-cycle type, without valves or carbureters, having directly injected fuel, which will be kerosene or even a somewhat cheaper product of petroleum. It is probable denatured alcohol will also be largely used. The engine will be capable of developing at normal speeds one brake horsepower for each five pounds of weight or less and having a turn-

ing effort at slow speeds approximating steam engines. There will be no gears, and the motor will be silent and smokeless. The chassis will be arranged to take on by quick adjustment different styles of bodies suited for different work, the same standard chassis being used for business, agricultural or pleasure purposes, and last but not least, the price of such vehicles will be within reach of all.

These statements will be derided by those who fondly believe the present automobile standardized. They laugh best who laugh last.

"A THING OF BEAUTY, UTILITY, AND A JOY FOREVER"

By WINTHROP E. SCARRITT, A. C. A. SHOW COMMITTEE.



WINTHROP E. SCARRITT AS A 1901 AUTOIST.
Member A. C. A. Show Committee.

THE most gratifying fact in connection with the automobile for 1908 is that it is approaching standardization and that few changes are made from the 1907 models. Refinements in details, a little improvement here and there, a weak part strengthened, surplus weight taken from other parts where experience

shows that it was not needed, and we have the 1908 motor car, the latest product of the master builder's skill, a thing of beauty, utility, and a joy forever.

My faith in the great future of the automobile increases daily. Pardon me if I repeat myself when I say that "The dreams of yesterday are the realities of to-day and the common places of to-morrow." How strikingly we have seen this great fact exemplified during the past few days! Five years ago the scientific world said that Marconi was a mad dreamer when he told it that he could telegraph without wires. That was a dream. This last week Marconi opened up commercial service between England and America and his dream has become a glorious reality. Some of us motor enthusiasts have been dreaming about the coming of the perfect automobile. One glad day this dream will become a splendid reality.

Then those who did the pioneering of automobiling and bore the brunt of educating the public can justly say "I told you so!"

A. C. A. BUREAU OF TOURS HAS A NOVEL EXHIBIT

AN exhibit made by the Bureau of Tours of the Automobile Club of America at the show will probably be of particular interest not alone because of its decided novelty in America, but also on account of the lesson intended to convey in a very effective manner and at a very opportune time.

The rapid growth of the network of improved highways throughout the various States can never be thoroughly enjoyed by the automobile tourist unless hotel accommodations along these highways keep step with the improvements on the road. In order to convey an object lesson to serve as a practical education to the hotel and innkeepers along highways improved and to be

improved, the Bureau of Tours exhibits a model room to serve as a sample of what should be done to give the automobile tourist the comforts of a good, clean bed and a bath at the end of a day's dusty journey. The room is furnished in a sanitary manner with iron bedstead, good quality mattress, linen and bedding, iron washstand and enamel bath tub. The furniture is not expected to be elaborate, but must be sanitary and practically germ and worm proof. It is believed that this exhibit will arouse a great deal of interest among the users of the country districts, and it will benefit all automobile users alike throughout the country if the lesson strikes home.

PREPARATIONS FOR CHICAGO'S NATIONAL SHOW

CHICAGO, Oct. 21.—Recent additions to the list of exhibitors at the First Annual Exhibition of Commercial Vehicles, to be held at the Seventh Regiment Armory, Chicago, at the same time as the annual display of pleasure cars, November 30-December 7, are the Advance Manufacturing Company, Chicago; Safir Automobile Company, Zurich, Switzerland; American Motor Truck Company, Lockport, N. Y.; Brush Runabout Company, Detroit; Streator Motor Car Company, Streator, Ill.; Worth Motor Car Company, Evansville, Ind. These bring the total up to twenty-six exhibitors of cars.

The Worth company has arranged to run a service of passenger cars between the Coliseum and Seventh Regiment Armory. The cars will run at intervals of about five minutes and there will be no charge for the service.

Included in the plan of decoration of the seventh annual

Chicago show will be 142 oil paintings, all of automobile subjects, covering 8,704 square feet of canvas. Of these pictures 112 will form a part of the background of the booths. They are being made by Maratta, one of the foremost of Chicago's artists. The remainder, covering a space of 8 by 668 feet, will encircle the building, around the gallery front, and are the work of the Daniels Scenic Studios.

A little additional space has been pressed into service in the Coliseum basement, making room for three of the automobile manufacturers who had been left out. The west end of the First Regiment Armory gallery will also be used, making room for about ten additional exhibits of accessories. There are fifteen makers of automobiles and forty makers of accessories on the waiting list. Some of them will probably be located in the commercial vehicle section.

TREND OF MOTOR DESIGN REVEALED BY THE SHOW

By CHARLES B. HAYWARD.



WHAT few departures from standard practice the passing of a little less than a twelvemonth has brought about are not easy to discern, for the time when the year of a motor's origin could be told at a glance is long since passed. Now it is quite evident that nothing short of a detailed analysis will suffice to reveal changes of a character so small as to appear of little or no importance, except to the experienced eye, and whether these changes really represent improvement or retrogression on the part of a designer is sometimes a question. Frequently the only thing that can be said of them is that they are changes, but as the purpose of the present article is merely to reflect current practice as revealed by the models put forth by the different makers for the coming year, and not to hold them up to criticism, it would be fruitless to pursue this side of the matter further, particularly in view of the impossibility of ever reconciling opinions to the extent of favoring any one standard of design. Despite the almost universal demand for a multi-cylindere motor, which has taken on an entirely new phase in the past year or so, as evidenced by the general appearance of six-cylinder models, the humble single-cylindere car still holds its own and seems destined to do so for a long while to come. Though it has all but disappeared so far as the old-line makers are concerned, the Cadillac and Reo being practically the only representatives of this type marketed, the "one-lunger" has come in for a new lease of life at the hands of the maker of what is destined to prove a large factor in the American automobile industry in the future—the buggyabout. Even here there is a marked tendency toward the adoption of the horizontal opposed type of engine, but there are many equipped with single-cylindere engines, while the number turned out by the two makers in question reaches a very substantial figure every year. The latter has also received new impetus by the production of a vertical type in the shape of the Brush runabout. It was generally thought a year or two ago that the day of both the single and twin-cylinder motor had passed and that within a short time they would be practically extinct, but such a development appears distant now.

Twin-cylinder Motor an Important Factor.

How far this has failed of realization is evident from the fact that the popularity of the two-cylinder motor has increased rather than diminished. Such makes as the Rambler, Reo, Maxwell, Moline and Jackson have been marketed during the past year in greater numbers than ever before, and a number of smaller firms have sprung up in the same time to manufacture this type of car, from all of which it appears quite conclusively that the two-cylinder car has an extremely strong hold on the public demand. Whether it will continue to keep it, once the four-cylinder type of car of equal capacity and attainments is brought down to the price level of the twin-cylinder, is another matter, as, popular opinion to the contrary notwithstanding, the prospective purchaser considers initial cost more than that of maintenance.

It can hardly be said that there has been any great amount of improvement in the design of either the single or twin-cylinder motor in the past few years, and certainly there is not a great deal to chronicle where these types are concerned in the new models offered at the Palace show. An exception is to be found in the case of the Brush vertical single-cylinder and the Rambler horizontal-opposed motor, in which the valves have been placed at

the side of the cylinders instead of on top, now being actuated by direct thrust from a single camshaft placed vertically and driven by a worm gear, this permitting the use of a release cam for starting in place of the usual release cocks.

Minor changes have been made by some of the other makers, but they are not of such a nature as may be taken to indicate any changed tendency of design. The selling price at which cars equipped with engines of this type are usually listed does not permit of extensive experimenting on the part of the makers, which probably accounts for the fact that the majority are quite content to let well enough alone, although it must be added that the well-enough of the past year where the horizontal-opposed motor is concerned has been a far more satisfactory state than that of but a year or two previous, so that great improvement has been brought about with but little visible change.

One of the most noticeable things in connection with the single and two-cylinder cars is the fact that for the first time the East is treated to a comprehensive showing of that product truly indigenous to the Middle West—the buggyabout. Probably the most prominent in the single-cylinder class is one that represents a radical departure in many things—the Brush runabout. In the buggyabout class there are the Holsman, the Reliable-Dayton, the Schacht, the Hatfield, Kiblinger, Success, and others.

To Be a Six-cylinder Year.

To jump to the opposite extreme, it is evident at a glance that 1908 is to be a six-cylinder year. The automobile-buying public has expressed its approval of the type in question in no uncertain manner and the majority of makers have not been slow to note the trend of the demand and to make preparations to take advantage of it. Nominally, then, there are not a few six-cylinder stock models; actually, the greater number of makers who have decided to list such a car in order to be able to cater to buyers of either class without having to sit on the fence, ever ready to drop on either side in accordance with the opinions of the prospective buyer, will only build such cars to order. Of course, all cars above a certain price are really only built to order, but in the case of the six-cylinder models, many of the makers have not quite made up their minds to plunge and will keep more closely within the demand than in the case of their four-cylinder models.

But the number of makers who have decided to list a model of this type leaves no possible room for doubt that the six-cylinder note will be a predominant one; at least it is in the show. In a few instances, such as the Chadwick, the makers have dropped all other models and concentrated their attention on the production of a car of this type. Some of the other makers whose stands will be centers of attraction on this account are the Acme, Ford, Frontenac, Glide, Marion, Mora, Gearless, Stoddard-Dayton, Premier, Welch, Pullman, American Mors, Colt, Frayer-Miller, Napier, Speedwell, and National. In this list will be noted several who will be entering upon their second year in the advocacy of the six-cylinder, such as the Ford, National, Frayer-Miller, and Napier, while considerable novelty is to be found in the Gearless six, not alone on account of its special form of transmission, but the fact that it is equipped with a two-cycle engine and is the first of its type to be presented.

Where motor design is concerned, the six-cylinder cars do not, as a rule, differ radically from those of their predecessors of four cylinders, but in one or two instances, such as that of the Chadwick, where the makers are pinning their faith entirely on the six-cylinder, their cars have been the subject of special attention and embody numerous features of merit. In the majority of instances, however, the six-cylinder merely represents the addition of two cylinders, other changes being confined to minor details or modifications necessary to suit the difference in the

power-plant. Wheelbases are a little longer and the cars, as a rule, are of the seven-seated type. In other words, the six-cylinder, as represented by the numerous models unveiled at the show, is a large car. This characterization may not be entirely just, as some of the makers have shaded matters to a point where their sixes are neither as large as the prevailing type, nor, for that matter, as large as many of the standard four-cylinder types.

Details of Motor Design and Construction.

It is a toss-up whether there has been any appreciable variation during the past year in that essential which really represents the foundation of the motor—the cylinder castings. Those who have hitherto advocated separately cast cylinders are still of the same opinion, and the same is true of their confrères who hold that the twin casting is superior, while there bids fair to be a new element introduced in that the practice current abroad of casting all four cylinders in one piece seems about to be taken up here. The foregoing would also appear to approximately sum up the situation where the matter of valve-placing is concerned; there are just about as many advocates of outboard, oppositely disposed ports, necessitating the use of two camshafts in the direct-thrust method, as there were a year ago, and there does not seem to have been either any additions to or defections from the ranks of those who favor concentrating the valves on one side.

The practice of placing the valves in the head has received at least one notable recruit in the shape of the new Ellsworth car, but so far as numbers are concerned, this is offset by the change on the part of the designers of the Rambler, who have come back to the direct-thrust method after two years in the other camp. But, then, the Ellsworth is a car of many special features, the valves being placed in the usual outboard ports, but actuated from a single superimposed camshaft through bronze rocker arms supported on annular ball-bearings. It also represents an exception to the usual practice of cylinder casting in that the jackets are left open at either side of the cylinder and covered by a light steel plate held on by screws. Apart from this particular instance, water-jacket design has undergone practically no change, the usual method of casting the jacket integral has been followed in the majority of instances, though there is a tendency to provide more liberal-sized openings than previously. The monotony is, of course, varied by such special systems as that of the Pullman, now in use for the past two years or more.

The practice of making the camshafts and cams integral has come to be followed in a greater number of instances and the placing of these essentials in the crankcase in a position to receive the benefit of splash lubrication is almost universal. Crankcase design has undergone but slight change where old line cars are concerned, though some of the new models exhibit a commendable tendency to provide a maximum of accessibility by using extra large hand plates. An exception to the former statement is to be found in the case of the new Rambler motor, which has a crankcase of the undivided type, the shaft with the center and end bearings assembled being put in through the end openings. Crankshaft design naturally depends upon the remaining features of the motor, and as there have been so few changes in the latter, this also applies to this essential. Materials have been improved and there is a decided tendency to regard anti-friction bearings for this purpose in a far more favorable light than formerly.

Improvement in Ignition and Carbureter Systems.

While there has been little or no radical change where either of these essentials is concerned, there is a marked tendency to follow certain definite lines in both cases. In that of the former, it is quite evident that the magneto is coming in for more and more favorable attention, even at the hands of builders of cars the selling price of which does not permit of equipping them with a magneto, except as an extra. In other respects, ignition systems reveal little or no change unless it be in the detailed refinement of coils, timers and similar apparatus, upon the proper design and working of which the ignition of a car depends to such a very great extent. With the exception of a few special-

ized systems, ignition practice as a whole, may be said to have settled down to a well-defined standard, or set of standards, which only vary with the price of the car. Where the latter is high, duplicate ignition with magneto and accumulators, frequently with two entirely independent systems, is the rule, though in many cases the same set of plugs and the magneto distributor are utilized for both sides.

In the case of the carbureter, there appears to be a decided tendency on the part of the builder of cars to shift the responsibility for this essential to the specialist. The latter has devoted a great deal of pains and study to the development of the carbureter, and the automobile designer has found the latter to have resulted so much more satisfactorily than his own efforts along the same line, that he appears to have been only too content to be able to specify an article of known merit for this rôle. It is accordingly not surprising to note the great number of instances in which cars are equipped with such standard makes of carbureters as the Schebler, Holley, Kingston, Universal, Buffalo, Heitger, and others, even though the remainder of the motor has been the subject of exclusive design and production.

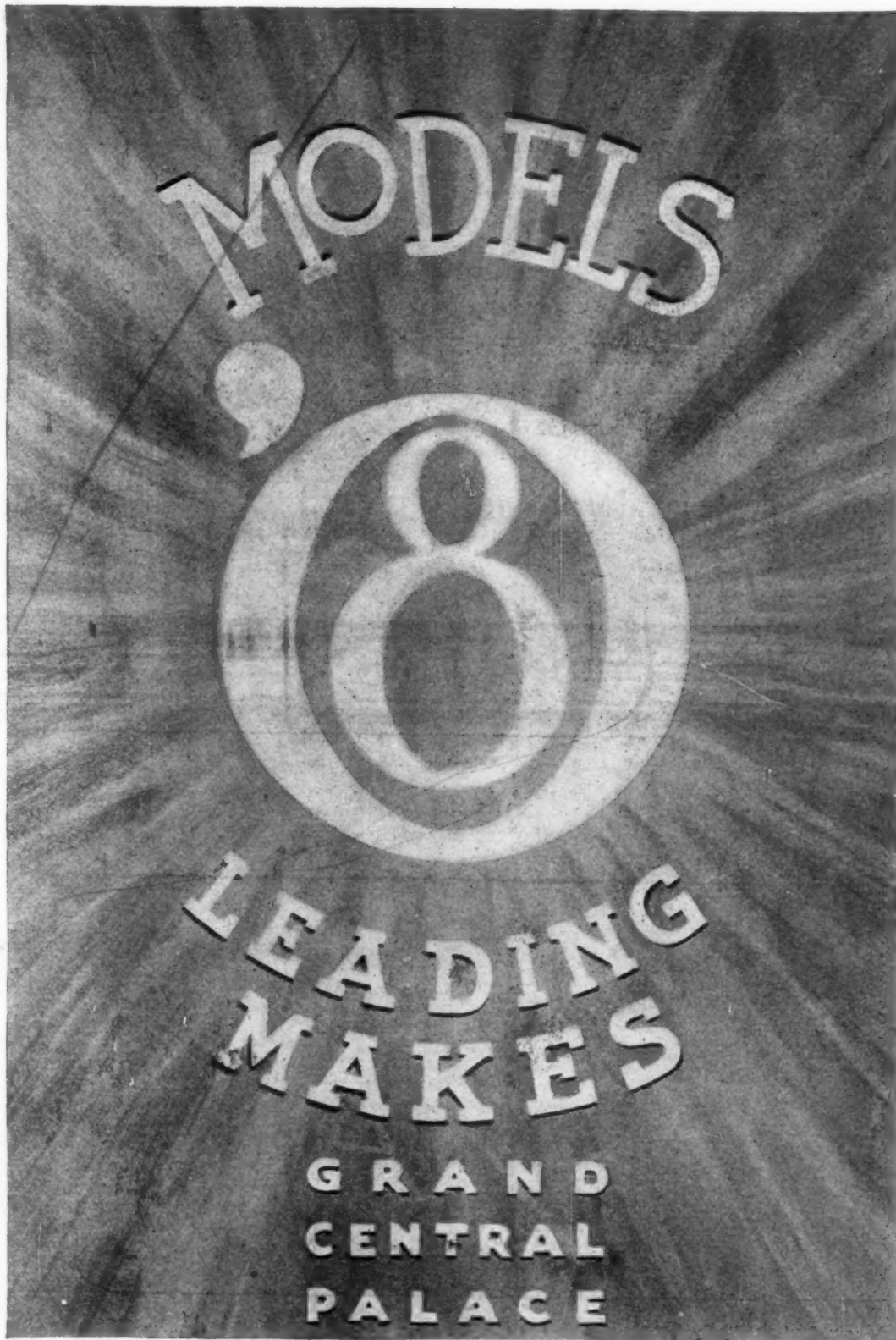
Concerning the carbureter itself, there has been a radical departure in design. This is to be found in the case of the Holley, which is now constructed on the well-known Venturi tube principle, thus eliminating the float chamber with its attendant complications and marking a long step in advance toward the goal of simplicity, which is the object most sought for in this piece of apparatus, long considered as something that could not be otherwise than complicated. To sum up the situation in this field, the average maker has found that the carbureter is an object of special manufacture and has come to the conclusion to drop all further efforts toward evolving special designs of his own.

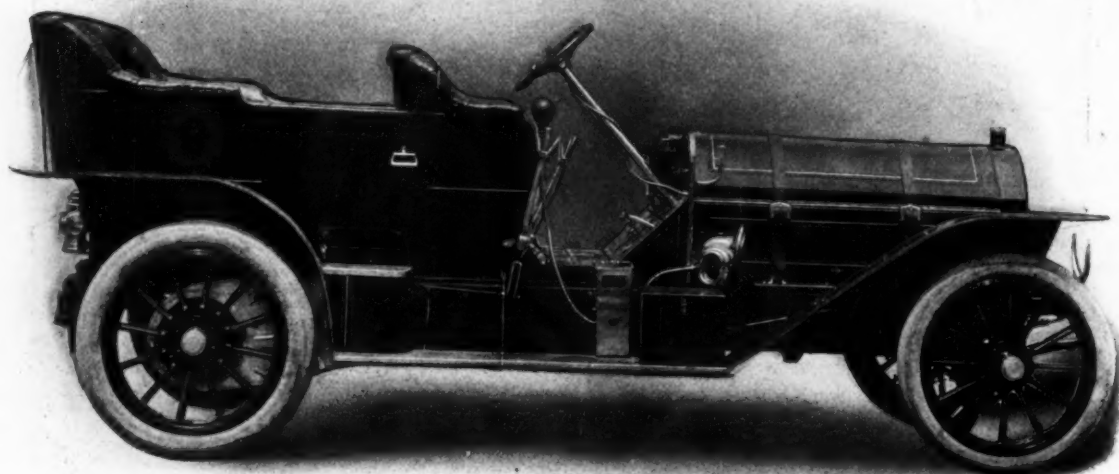
Status of the Air-cooled Car and the Two-cycle.

That there have been no unusual developments where either of these is concerned need occasion no surprise, nor be considered as something to their detriment. The past year has been marked by the defection from the ranks of the advocates of air-cooling, by one or two concerns, but for reasons which were set forth in these columns and editorially commented on at the time. Air-cooling having demonstrated, not alone its feasibility, but its advantages beyond the shadow of a doubt, is hardly to be considered as less well-established where the American industry is concerned, merely because there are not so many makers who are manufacturing cars of this type. The same thing is applicable to the status of the two-cycle motor as well. This has received more or less impetus during the past year by the adoption of this type of motor in some of the small, light cars, otherwise known as buggyabouts, which appear in numbers for the first time at this week's show. But there is a genuine surprise awaiting the average show-goer in the shape of the Gearless six-cylinder car having a two-cycle engine. The same car is also made with a four-cylinder engine of the same type, so that it is evident this type of motor has gained a valuable addition to the number of advocates who are building and marketing cars thus equipped. Then there is the expansion of the Atlas line from the single representative in the shape of a small two-cylinder runabout of a year ago to a well-developed line, all of which are equipped with the special type of two-cycle engine used by the Atlas concern on both its commercial as well as its pleasure vehicles, so that it would seem that the passing of 1908 would mark the advent of a great many more two-cycle cars on the road than has ever been the case in previous years.

Progress has not been marked, however, and the advance accomplished is probably not apparent to the casual observer, who takes small account of anything so inconspicuous. The apathy on the part of the industry where both these special types are concerned is readily accounted for by the fact that the four-cycle water-cooled type has had the great advantage of priority and in consequence the greater development that the study of such a large number of makers and users have been able to bring to bear

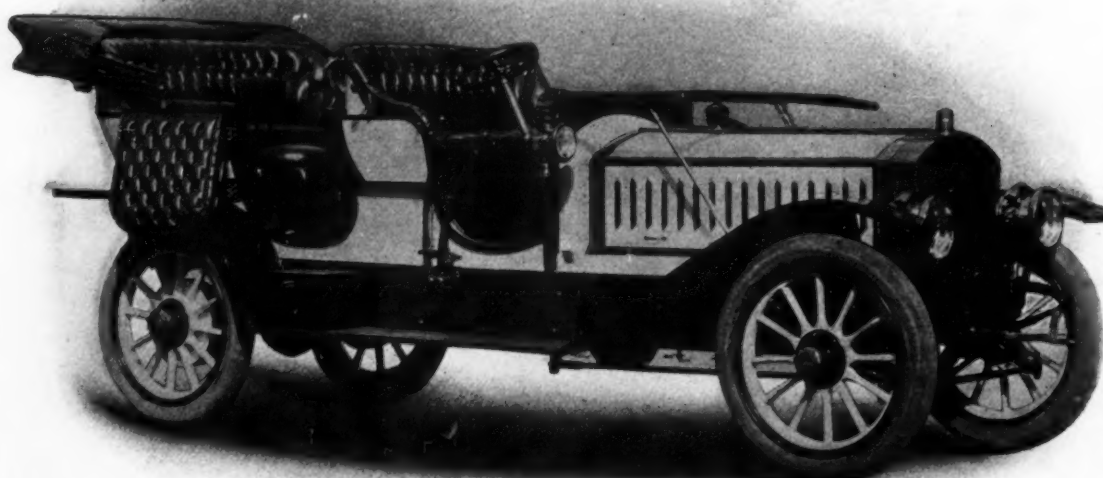
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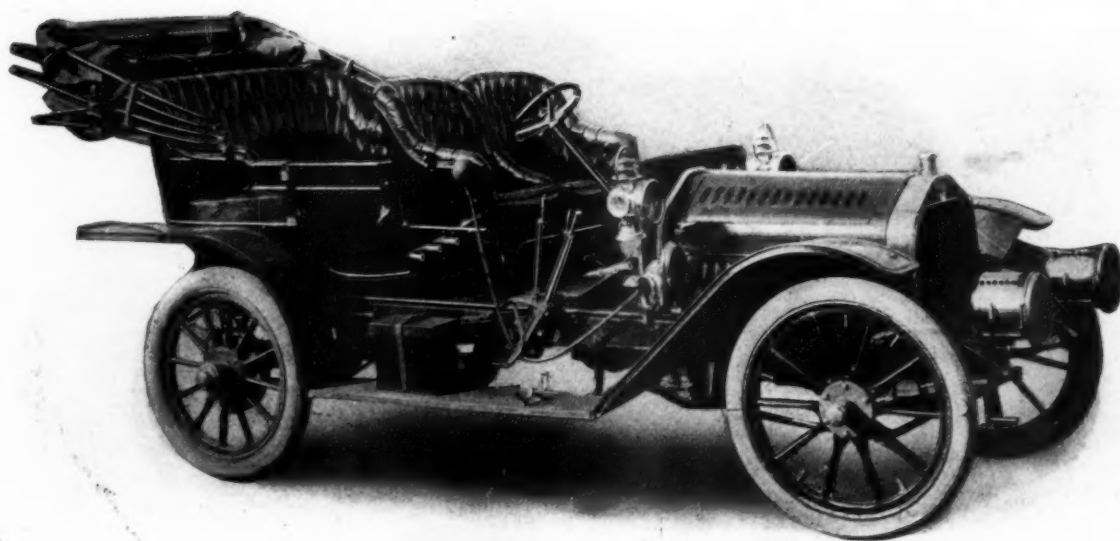


GREAT CHADWICK TOURING CAR, 6 CYLINDERS, 70-75-H.P., PRICE \$5,500.
Chadwick Engineering Works, Philadelphia.

1908

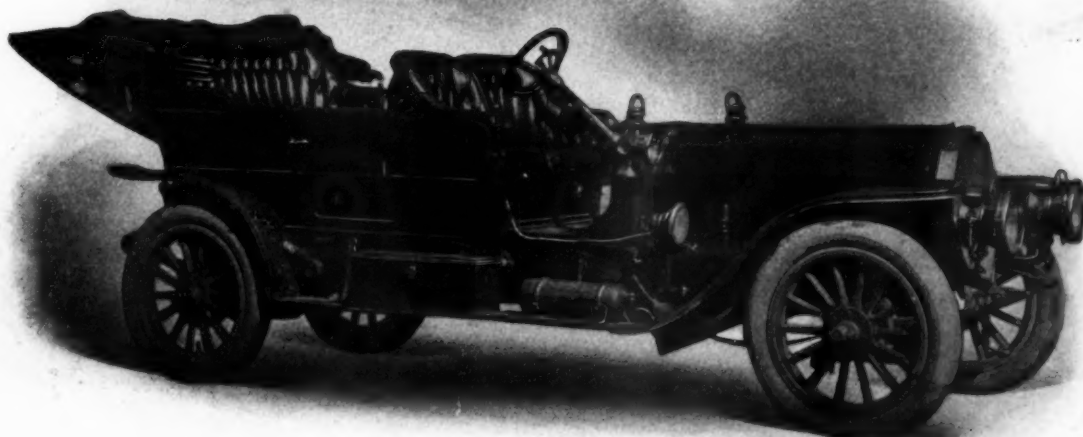


AUSTIN TOURING CAR, 6 CYLINDERS, 90-H.P., PRICE \$6,000.
Austin Automobile Co., Grand Rapids, Mich.

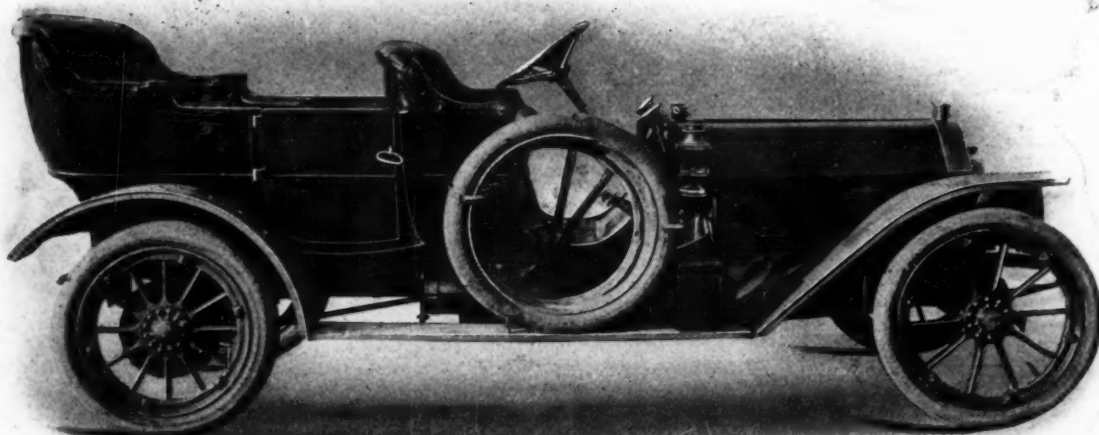


MORA TOURER, 6 CYLINDERS, 42-50-H.P., PRICE \$3,600.
Mora Motor Co., Newark, N. Y.

1908

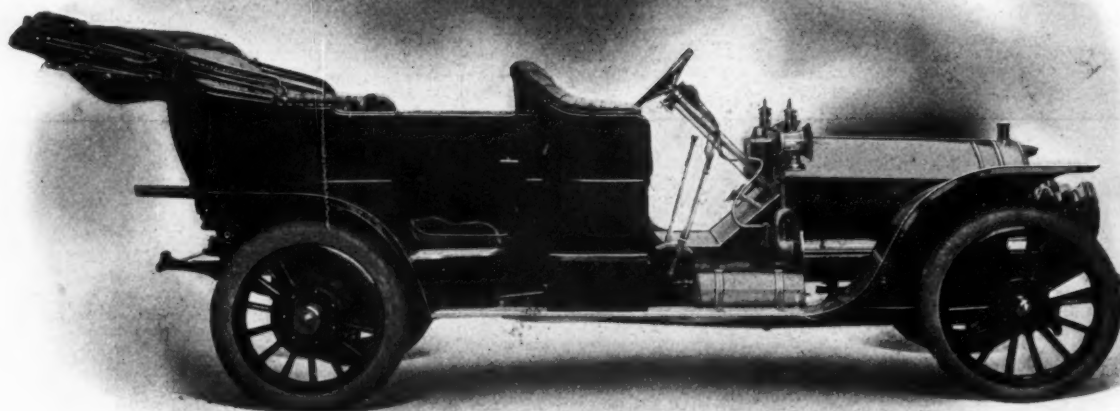


WELCH MODEL 6-L TOURING CAR, 70-H.P., PRICE \$6,000.
Welch Motor Car Co., Pontiac, Mich.



PREMIER TOURING CAR, 6 CYLINDERS, 45-H.P., PRICE \$3,750.
Premier Motor Manufacturing Co., Indianapolis, Ind.

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STODDARD-DAYTON MODEL G TOURING CAR, 6 CYLINDERS, 50-H.P., PRICE \$4,500.
Dayton Motor Car Co., Dayton, O.

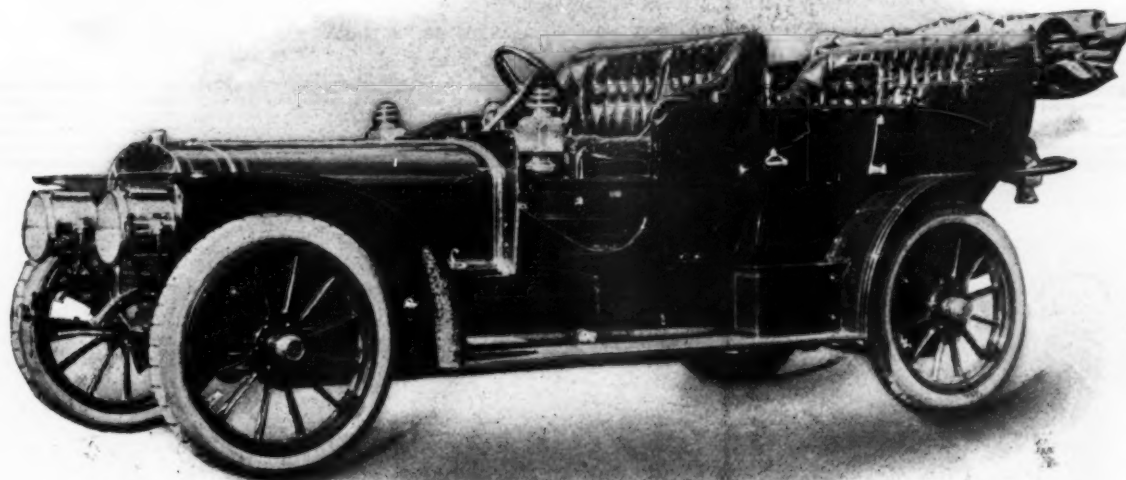


BERLIET TOURING CAR, 6 CYLINDERS, 60-H.P., PRICE \$4,500.

American Locomotive Automobile Co., Providence, R. I.

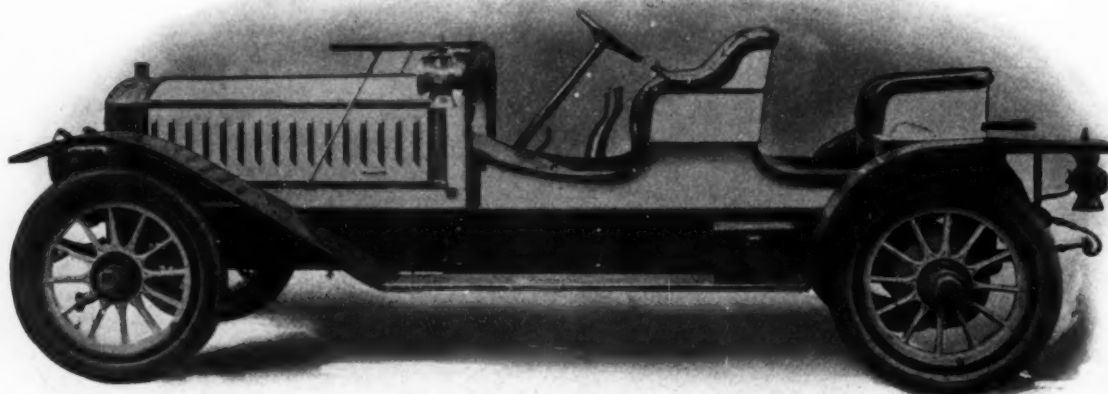
The Berliet is not exhibited at the Grand Central Palace, but is shown at the manufacturers' special salesrooms at the Waldorf-Astoria.

1908



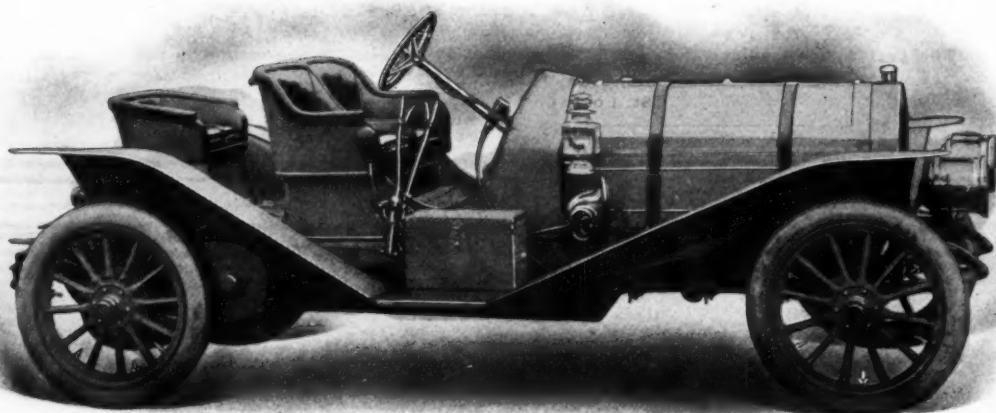
ACME SEXTUPLET TOURING CAR, 6 CYLINDERS, 45-H.P., PRICE \$4,500.

The Acme Motor Car Co., Reading, Pa.

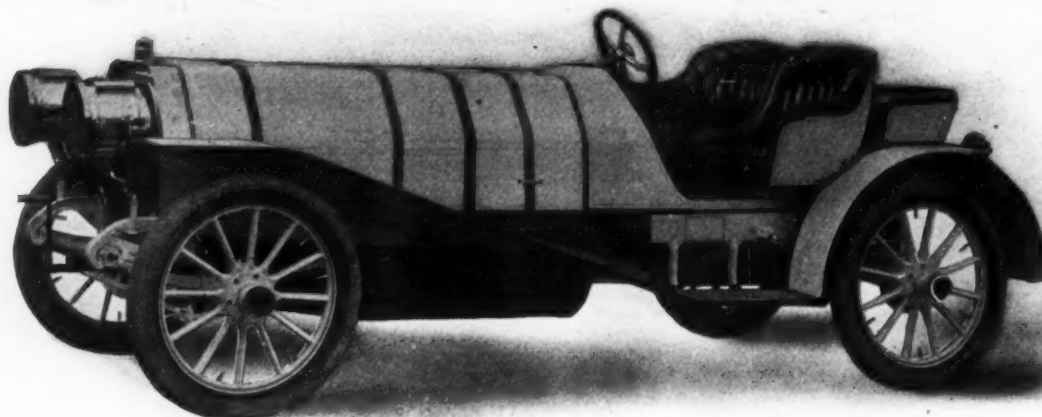


AUSTIN RUNABOUT, MODEL XC-R, COMBINATION BODY, 90-H.P., PRICE \$6,000.
Austin Automobile Co., Grand Rapids, Mich.

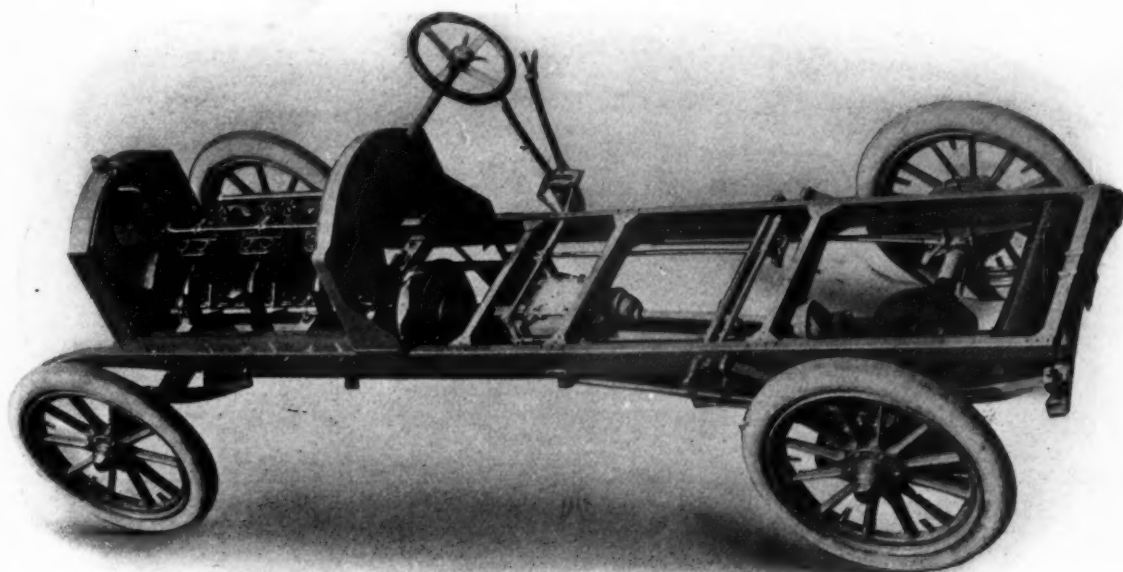
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GREAT CHADWICK TOURABOUT, 6 CYLINDERS, 50-H.P., PRICE \$5,500.
Chadwick Engineering Works, Philadelphia, Pa.

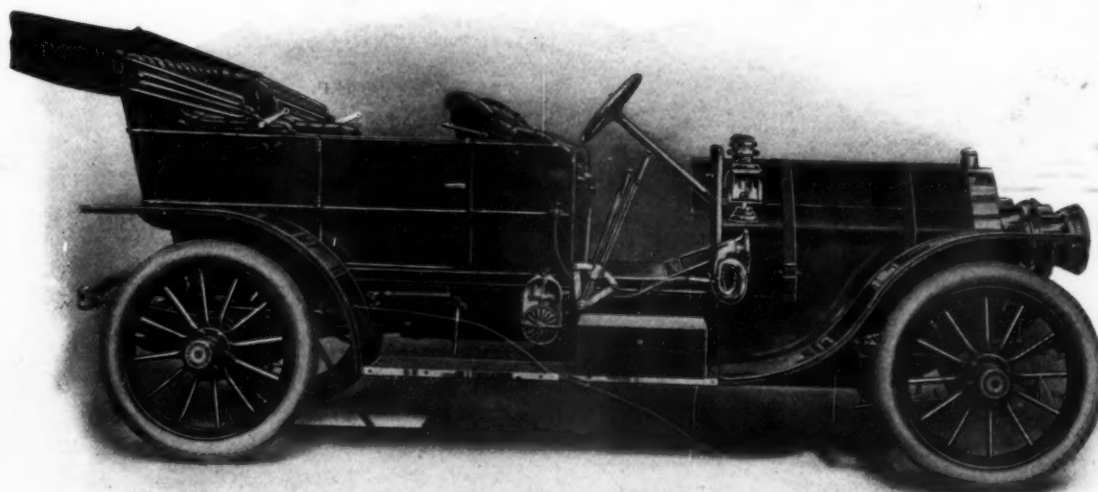


GEARLESS GREYHOUND ROADSTER, 6 CYLINDERS, 75-H.P., PRICE \$4,000.
Gearless Transmission Co., Rochester, N. Y.

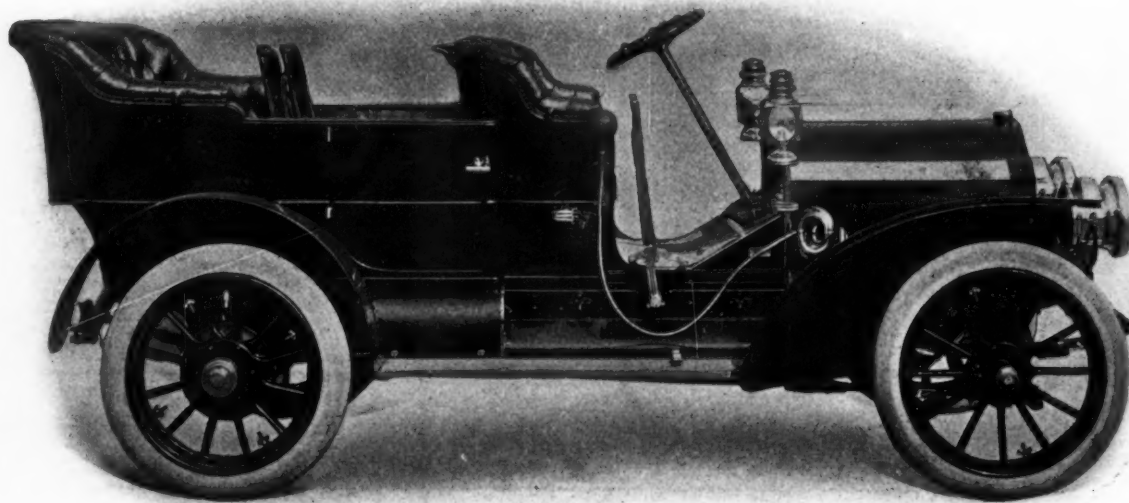


AMERICAN MORS CHASSIS, 6 CYLINDERS, 40-H.P., PRICE, TOURING CAR, \$4,250.
St. Louis Car Company, St. Louis.

1908

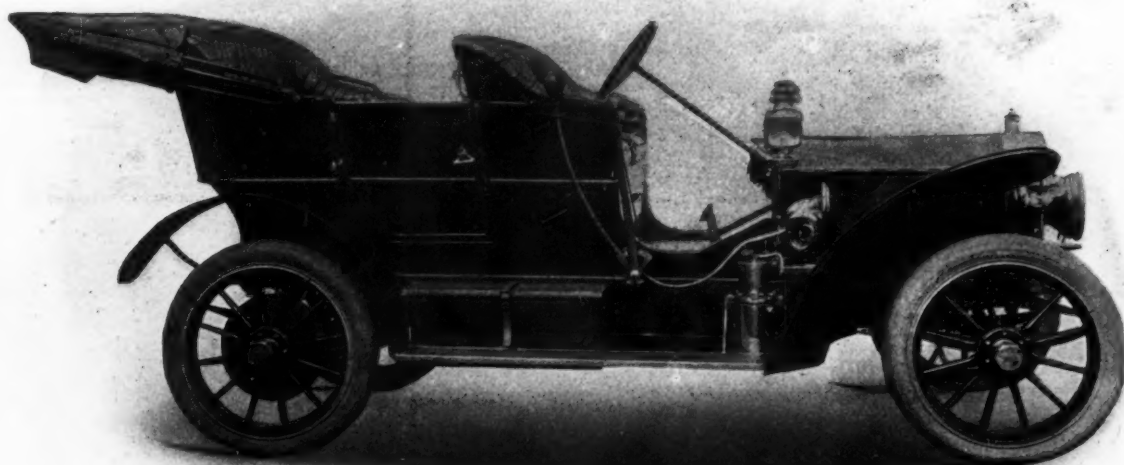


GEARLESS TOURING CAR, 4 CYLINDERS, 60-H.P., PRICE \$3,500.
Gearless Transmission Co., Rochester, N. Y.

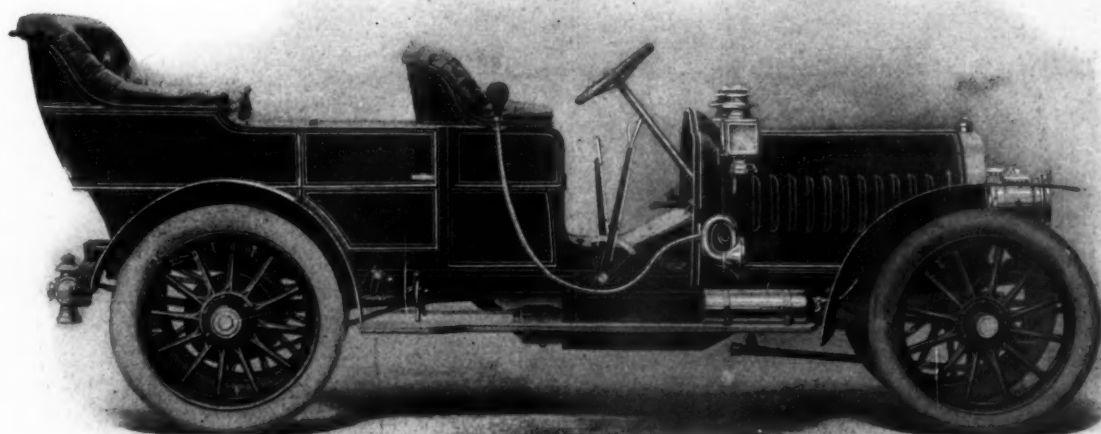


GARFORD TOURING CAR, MODEL B, 4 CYLINDERS, 40-H.P., PRICE \$4,000.
Garford Manufacturing Co., Elyria, O.

1908

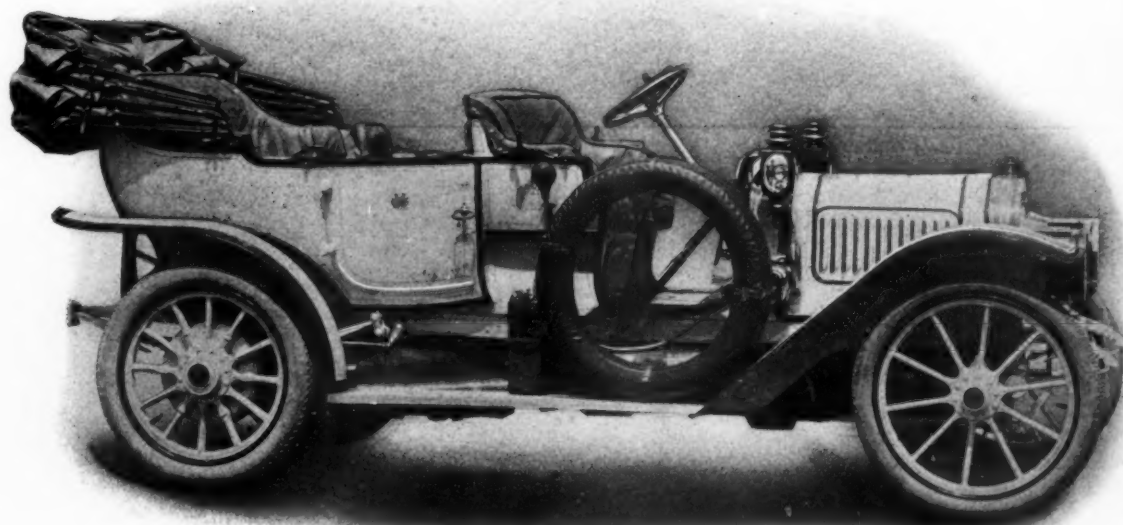


GREAT SMITH TOURING CAR, 4 CYLINDERS, PRICE \$2,500.
Smith Auto Co., Topeka, Kan.

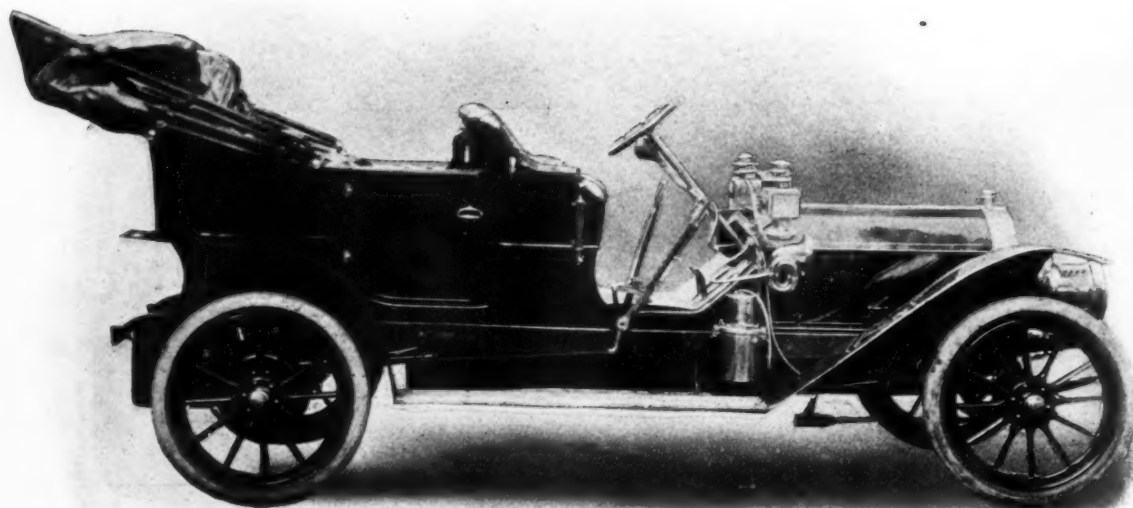


RAINIER TOURING CAR, MODEL D, 4 CYLINDERS, 45-50-H.P., PRICE \$4,500.
Rainier Motor Car Co., Saginaw, Mich.

1908

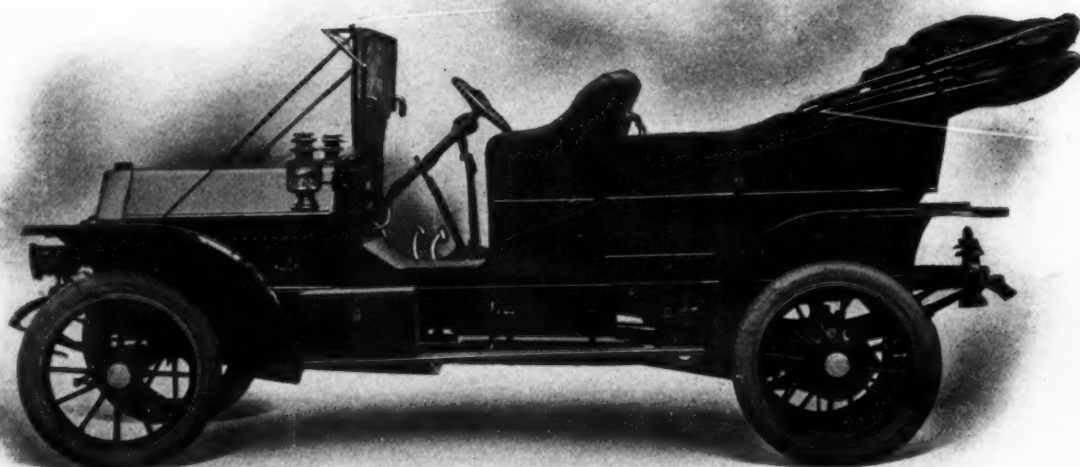


DE LUXE TOURING CAR, 4 CYLINDERS, 40-H.P., PRICE \$5,000.
De Luxe Motor Car Co., Detroit, Mich.

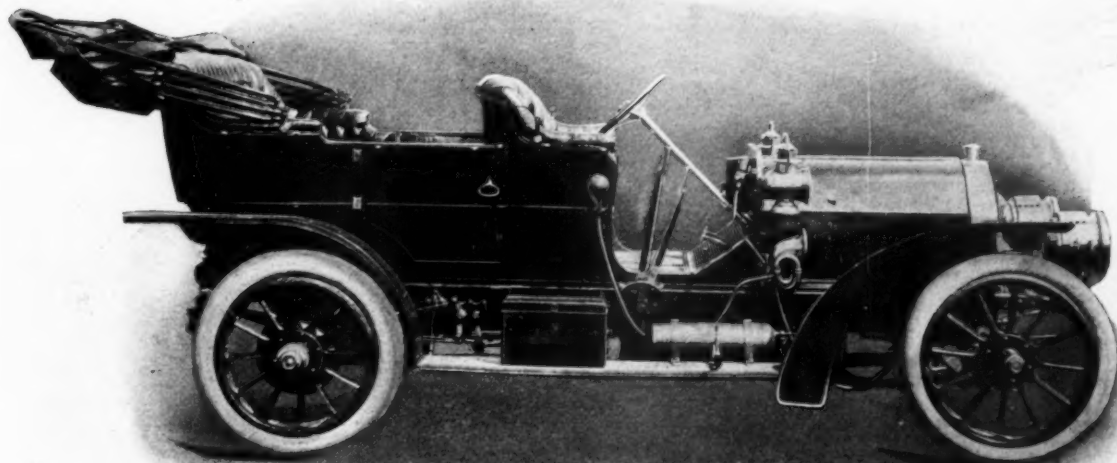


CONTINENTAL TOURING CAR, MODEL C, 4 CYLINDERS, 35-H.P., PRICE \$3,000.
Continental Auto Manufacturing Co., New Haven, Conn.

1908

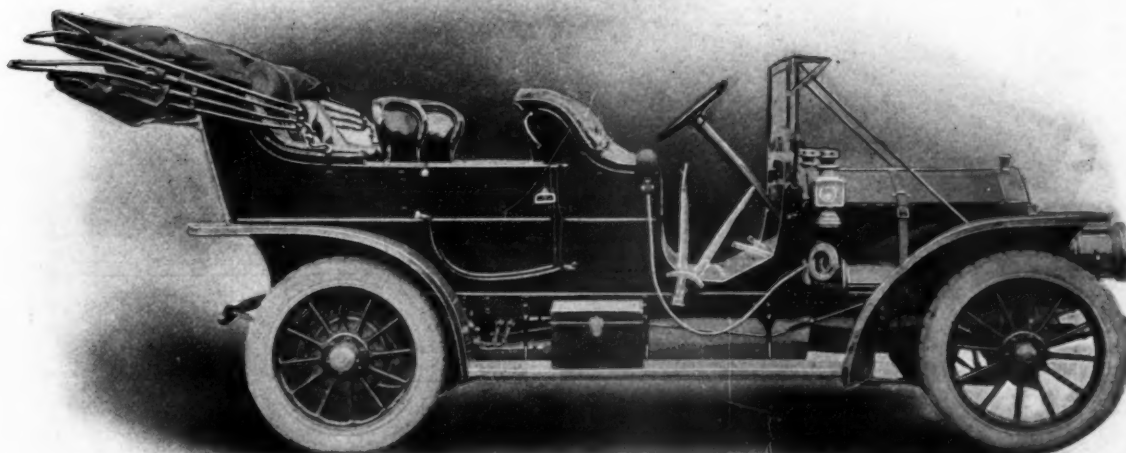


GLIDE TOURING CAR, 4 CYLINDERS, 45-H.P., PRICE \$3,000.
The Bartholomew Company, Peoria, Ill.

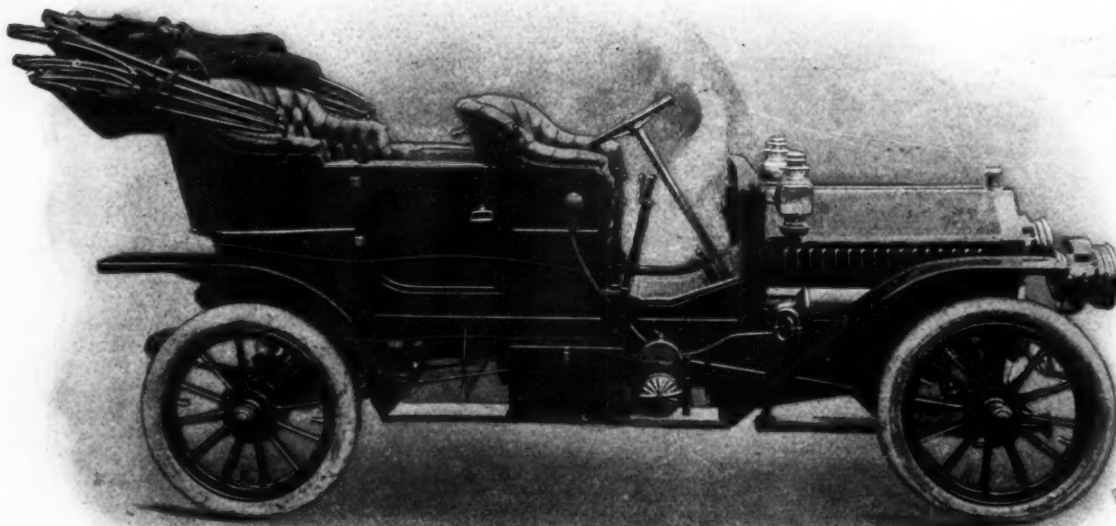


PENNSYLVANIA TOURING CAR, TYPE C, 4 CYLINDERS, 40-H.P., PRICE \$3,000.
Pennsylvania Auto Motor Co., Bryn Mawr, Pa.

1908

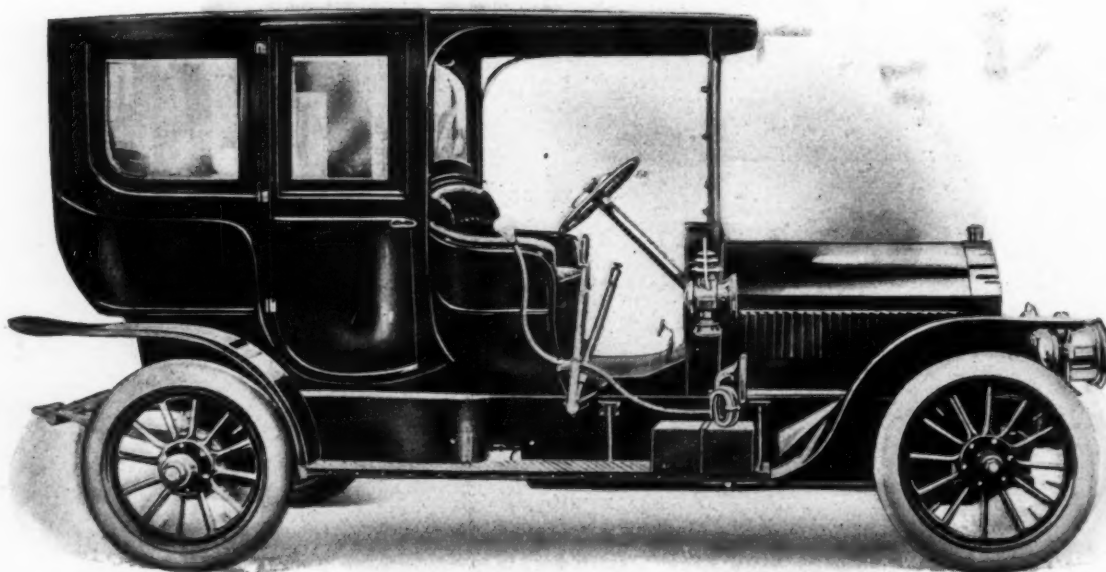


PULLMAN TOURING CAR, MODEL J, 4 CYLINDERS, 40-H.P., PRICE \$3,750.
York Motor Car Co., York, Pa.



MOLINE TOURING CAR, MODEL A, 4 CYLINDERS, 35-H.P., PRICE \$2,500.
Moline Automobile Co., East Moline, Ill.

1908

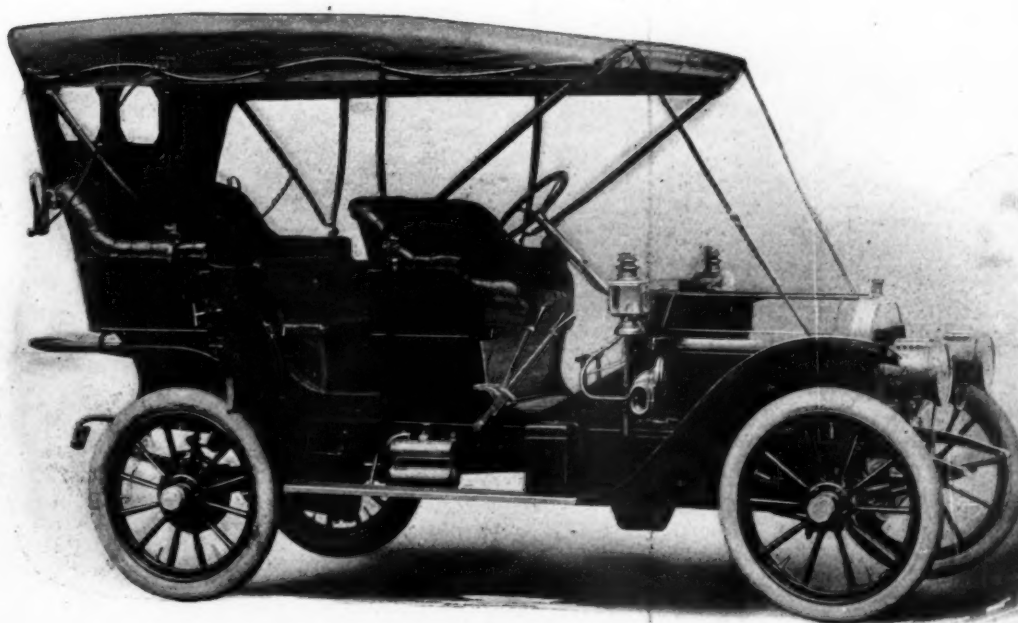


FRONTENAC LIMOUSINE, 4 CYLINDERS, 40-H.P., PRICE \$5,000.
Abendroth & Root Manufacturing Co., Newburgh, N. Y.

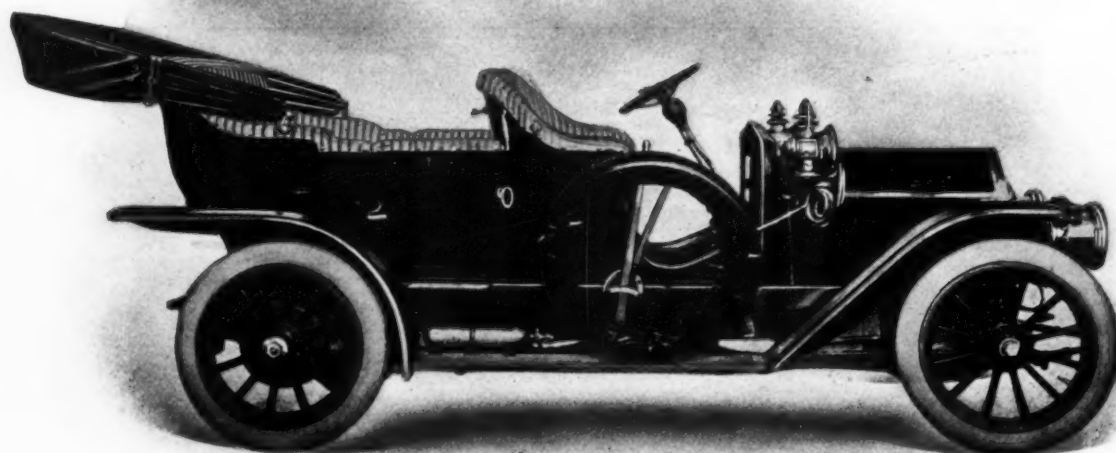


AMERICAN MORS TOURING CAR, 4 CYLINDERS, 14-18-H.P., PRICE \$3,000.
St. Louis Car Co., St. Louis, Mo.

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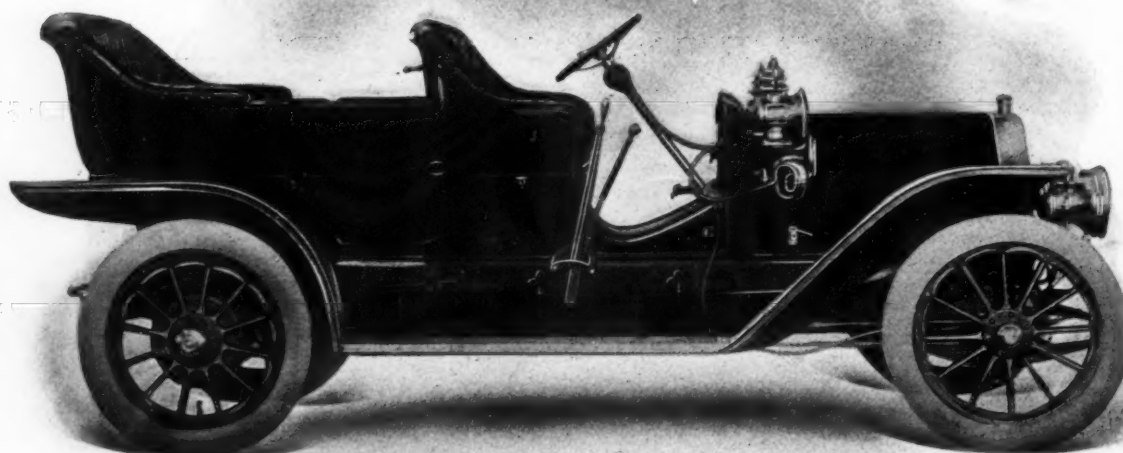


WAYNE TOURING CAR, 4 CYLINDERS, 30-35-H.P., PRICE \$2,500.
Wayne Automobile Co., Detroit, Mich.

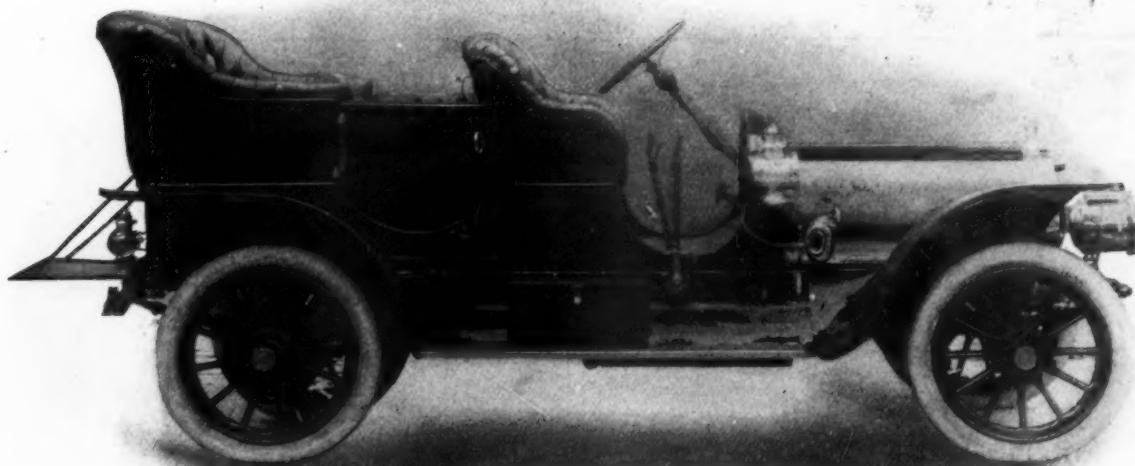


MARMON, MODEL H, 4 CYLINDERS, 35-40-H.P., AIR-COOLED, PRICE \$3,500.
Nordyke & Marmon Co., Indianapolis, Ind.

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MARMON, MODEL H, 4 CYLINDERS, 40-45-H.P., WATER-COOLED, PRICE \$3,500
Nordyke & Marmon Co., Indianapolis, Ind.

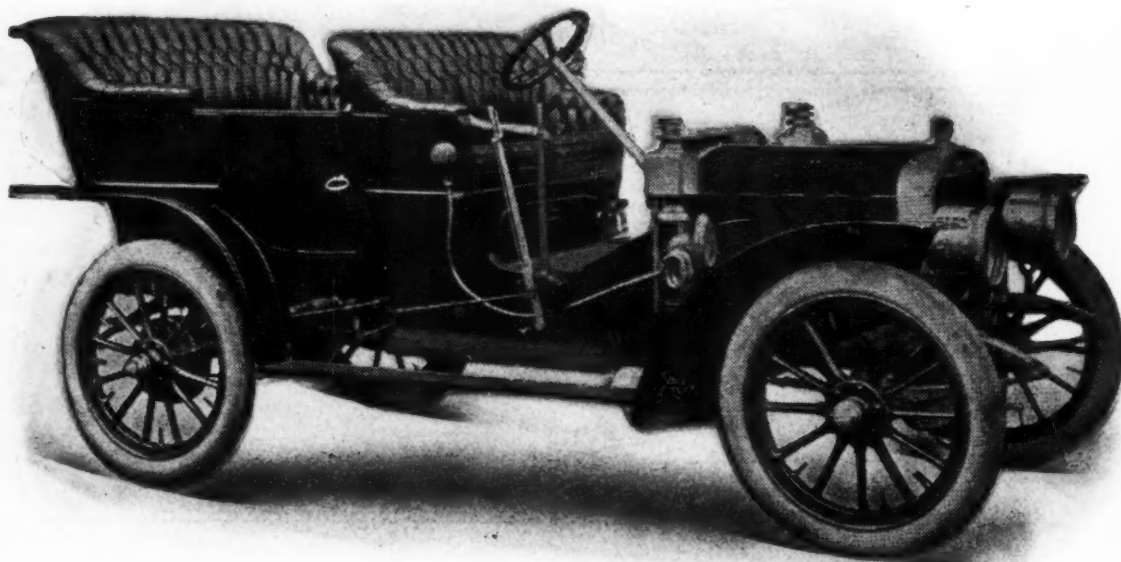


NATIONAL TOURING CAR, MODEL K, 4 CYLINDERS, PRICE \$3,500.
National Motor Vehicle Corporation, Indianapolis, Ind.

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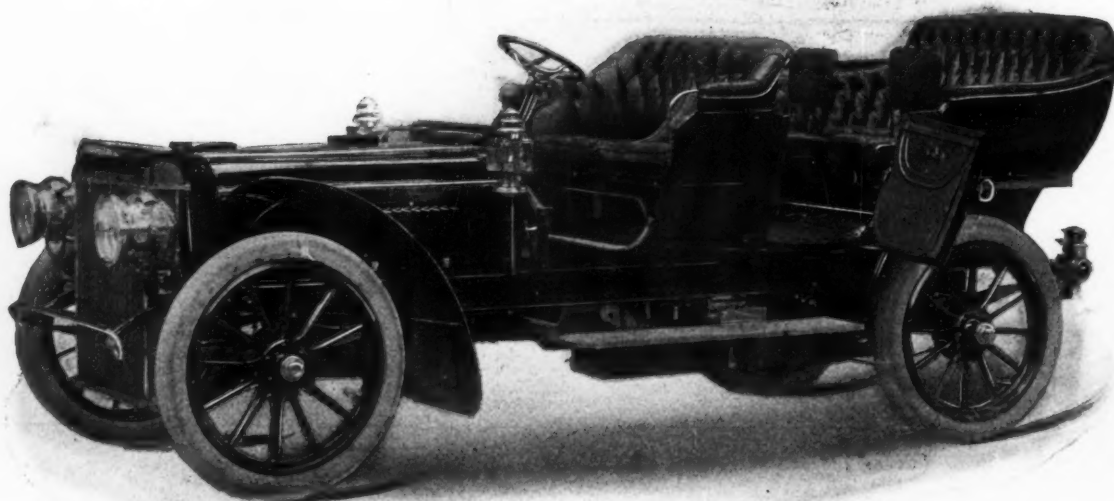


JACKSON TOURING CAR, MODEL E, 4 CYLINDERS, 35-H.P., PRICE \$2,000.
Jackson Automobile Co., Jackson, Mich.

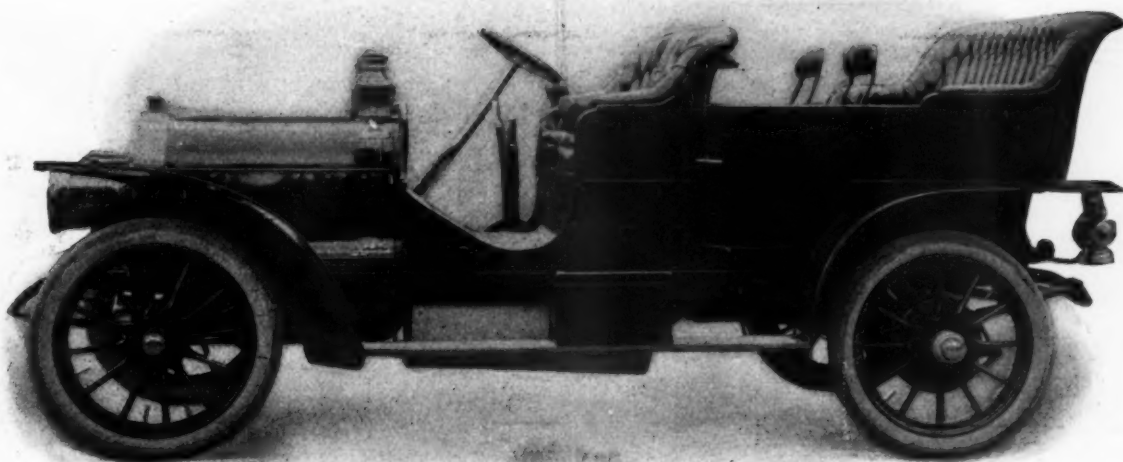


DORRIS TOURING CAR, MODEL C, 4 CYLINDERS, 30-H.P., PRICE \$2,500.
Dorris Motor Car Co., St. Louis, Mo.

1908

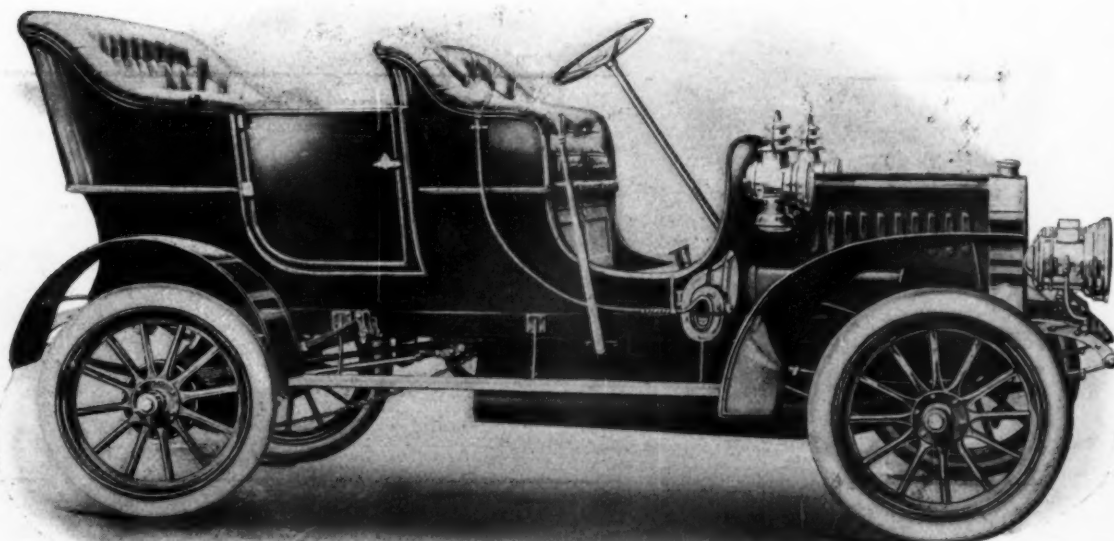


LANE STEAMER TOURING CAR, MODEL 8-7, 30-H.P., PRICE \$3,500.
Lane Motor Vehicle Co., Poughkeepsie, N. Y.

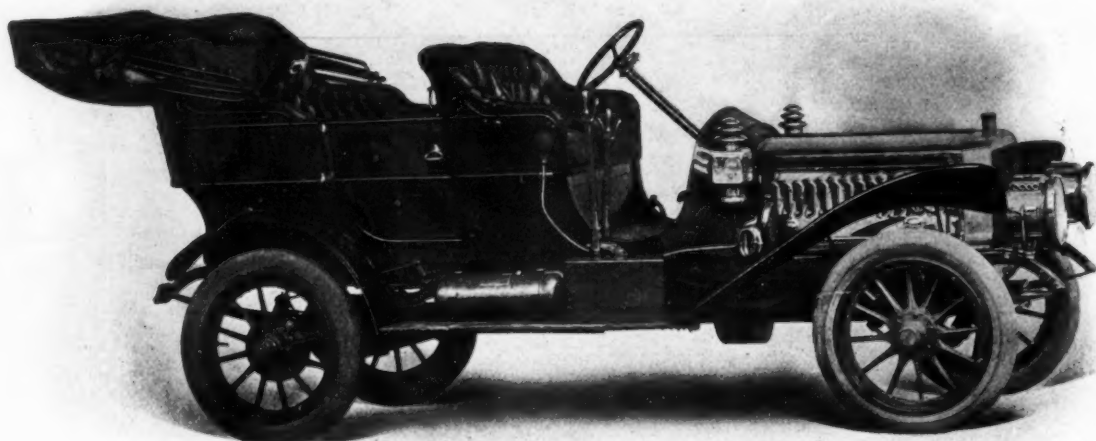


GAETH TOURING CAR, TYPE XV, 4 CYLINDERS, 35-40-H.P., PRICE \$3,500.
Gaeth Automobile Co., Cleveland, O.

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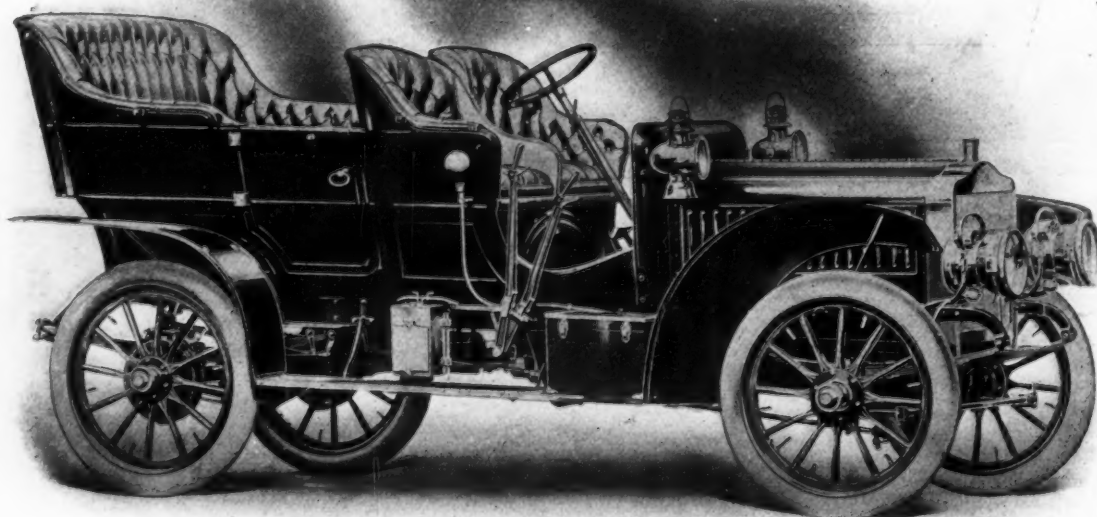


CARTERCAR, MODEL A, 2 CYLINDERS, 22-H.P., PRICE \$1,350.
Motorcar Company, Detroit, Mich.

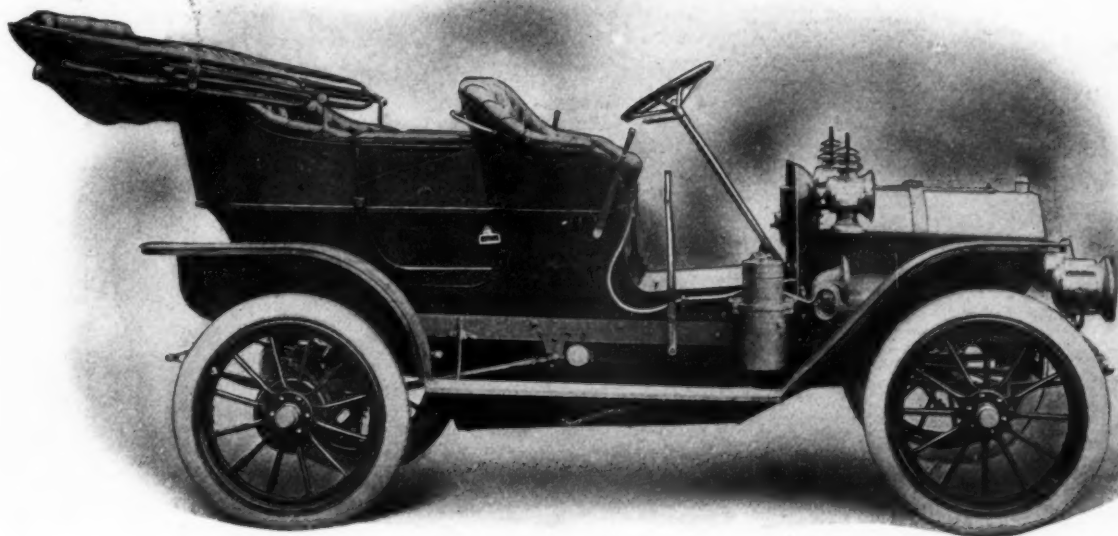


MITCHELL, MODEL I, 4 CYLINDERS, 35-H.P., PRICE \$2,000.
Mitchell Motor Car Co., Racine, Wis.

1908

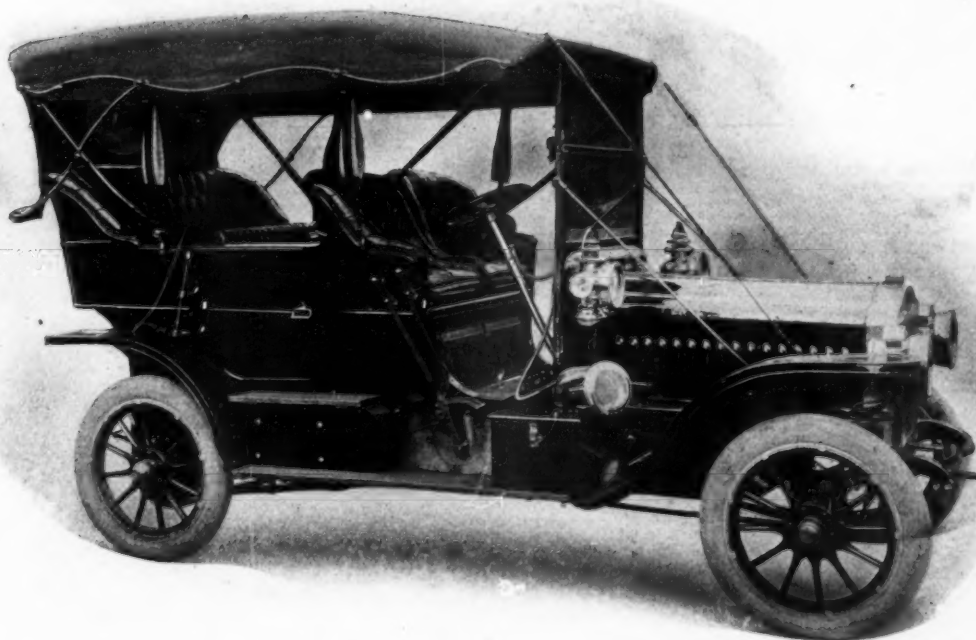


MAXWELL TOURING CAR, MODEL M, 4 CYLINDERS, 40-H.P., PRICE \$3,000.
Maxwell-Briscoe Motor Co., Tarrytown, N. Y.

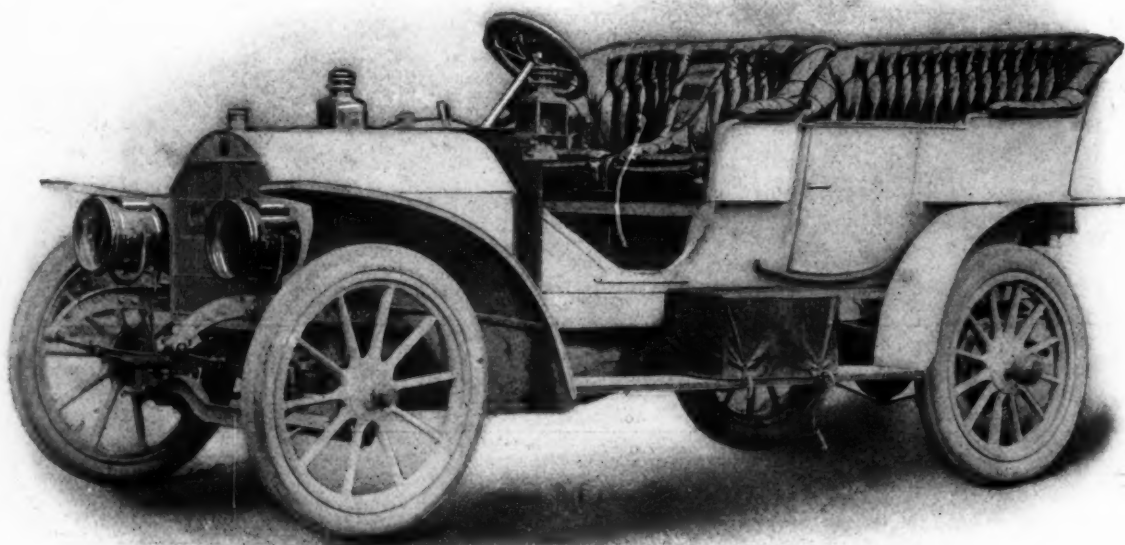


REO TOURING CAR, MODEL A, 2 CYLINDERS, 18-H.P., PRICE \$1,250.
R. M. Owen & Co., 1759 Broadway, New York.

1908

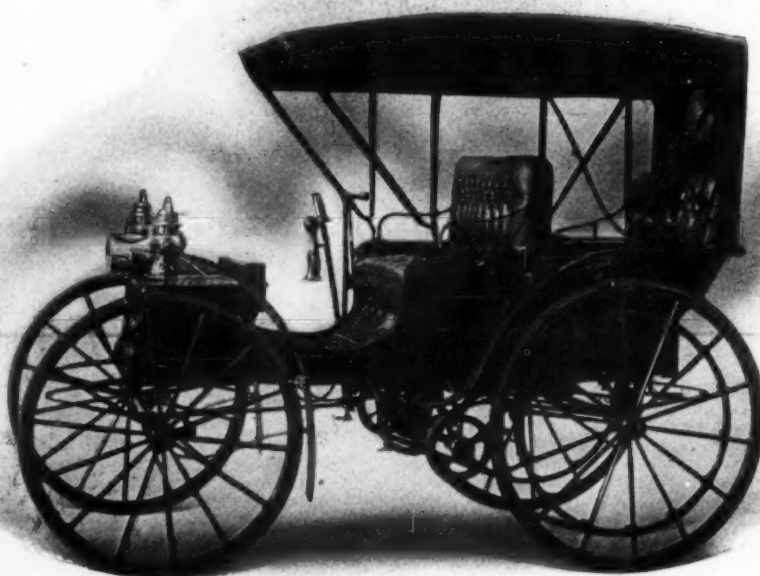


LAMBERT TOURING CAR, 4 CYLINDERS, 35-40-H.P., PRICE \$2,500.
Buckeye Manufacturing Co., Anderson, Ind.

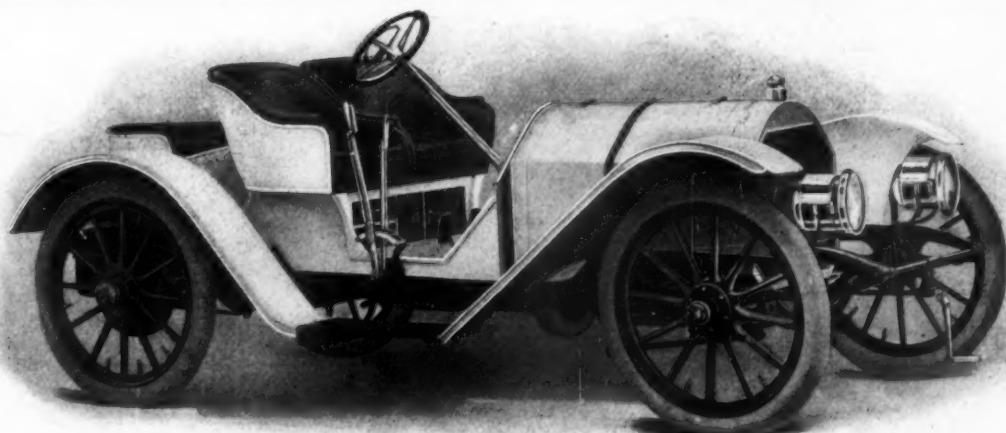


CLEVELAND TOURING CAR, 4 CYLINDERS, 40-45-H.P., PRICE \$3,500.
Cleveland Motor Car Co., 1659 Broadway, New York.

1908

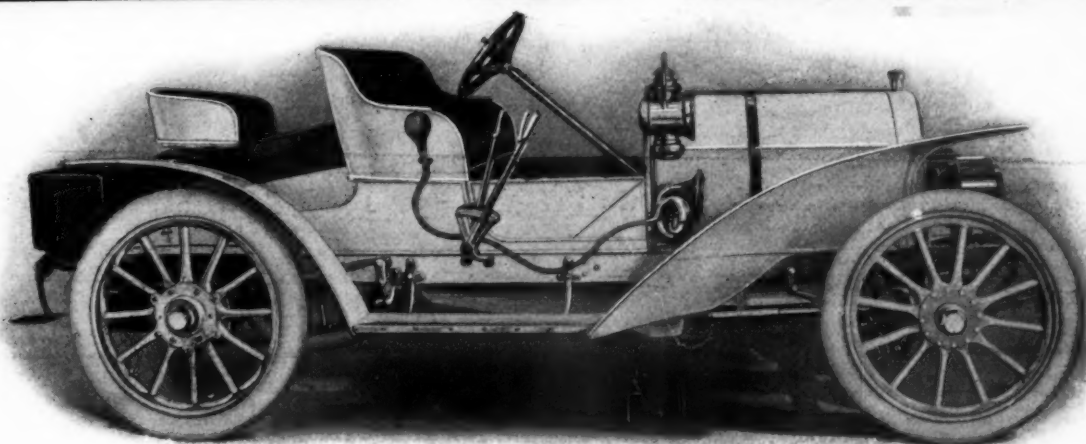


HOLSMAN SURREY, 2 CYLINDERS, 12-H.P., PRICE \$800.
Holsman Automobile Co., Chicago.

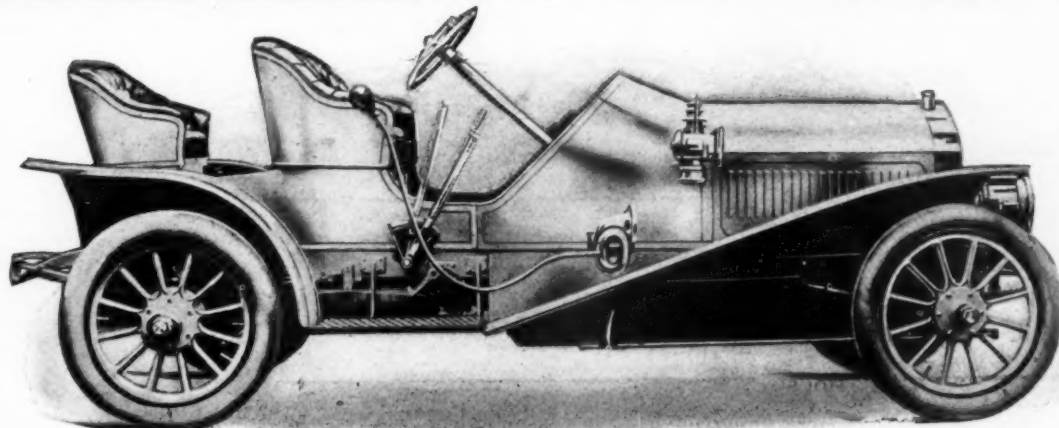


IMPERIAL ROADSTER, 4 CYLINDERS, 30-35-H.P., PRICE \$2,500.
Imperial Motor Car Co., Williamsport, Pa.

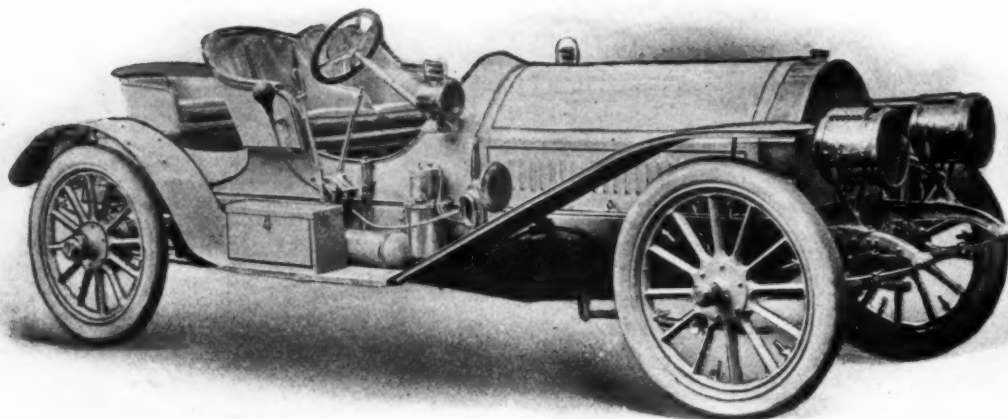
1908



SHAWMUT RUNABOUT, MODEL A, 4 CYLINDERS, 65-H.P., PRICE \$4,750.
Shawmut Motor Co., Stoneham, Mass.

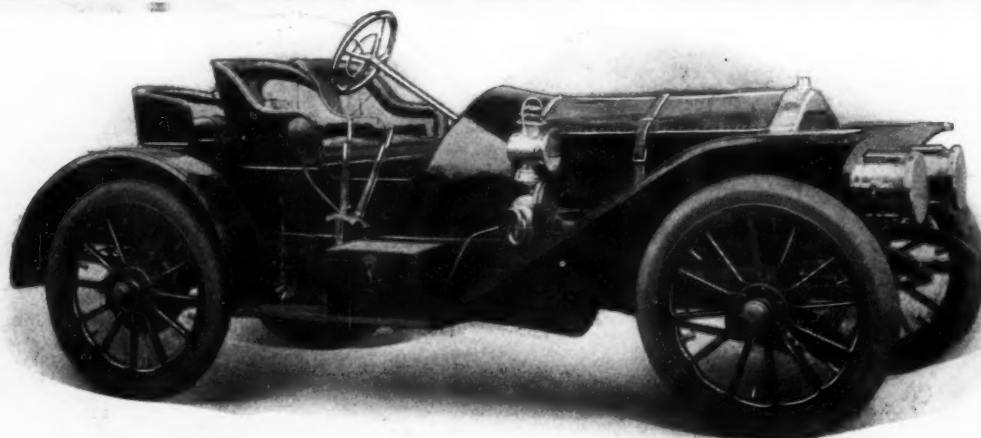


FRONTENAC TOURING RUNABOUT, 4 CYLINDERS, 45-50-H.P., PRICE \$4,000,
Abendroth & Root Manufacturing Co., Newburgh, N. Y.

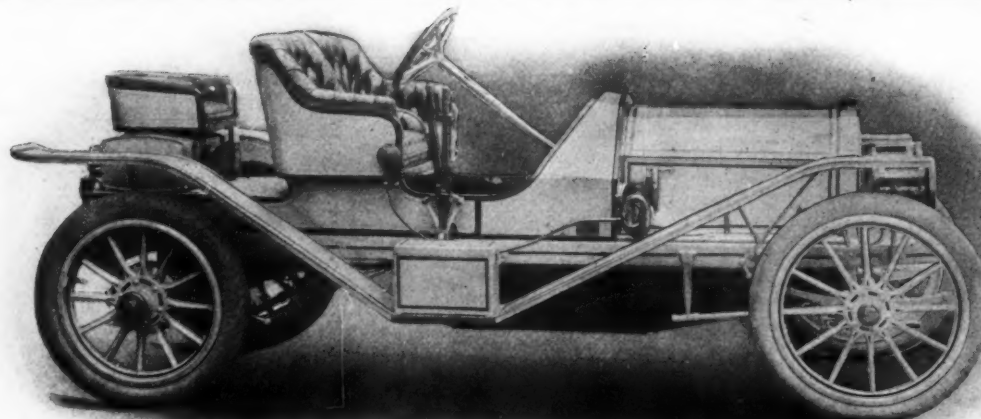


SPEEDWELL ROADSTER, 6 CYLINDERS, 60-H.P., PRICE \$4,250.
Speedwell Motor Car Co., Dayton, O.

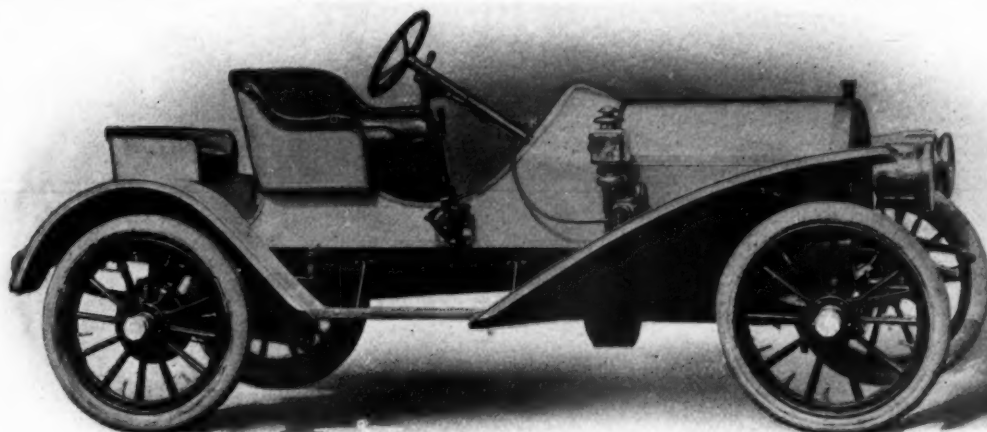
1908



PULLMAN RUNABOUT, MODEL 4-40, 4 CYLINDERS, 40-H.P., PRICE \$3,000.
York Motor Car Co., York, Pa.

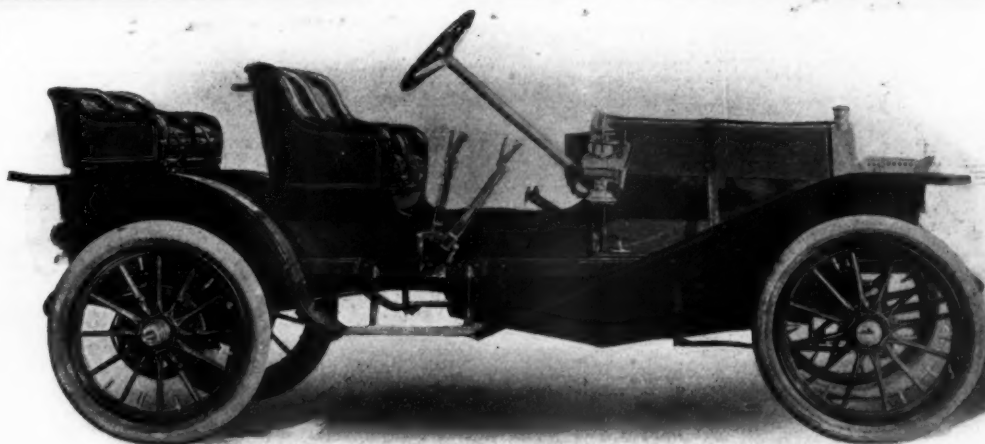


MOON ROADSTER, 4 CYLINDERS, 30-H.P., 3 PASSENGERS, PRICE \$3,250.
Moon Motor Car Co., St. Louis, Mo.

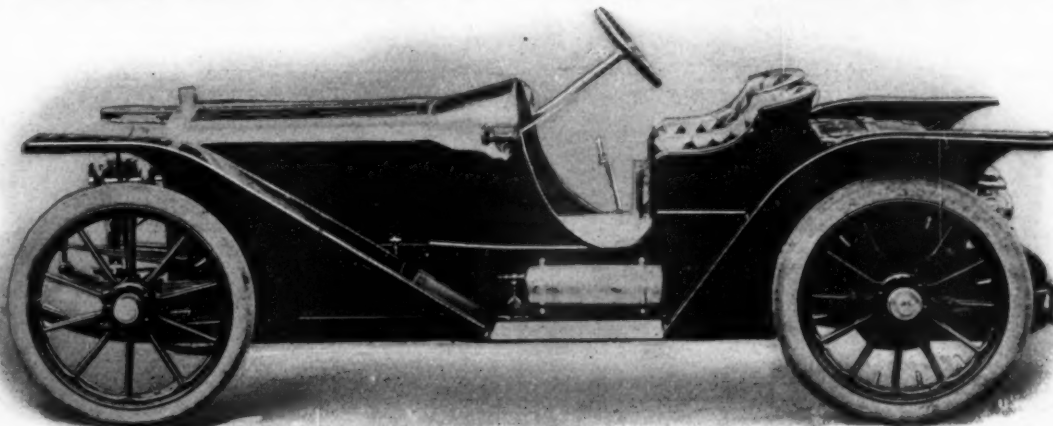


WAYNE RUNABOUT, 4 CYLINDERS, 30-35-H.P., PRICE \$2,500.
Wayne Automobile Co., Detroit, Mich.

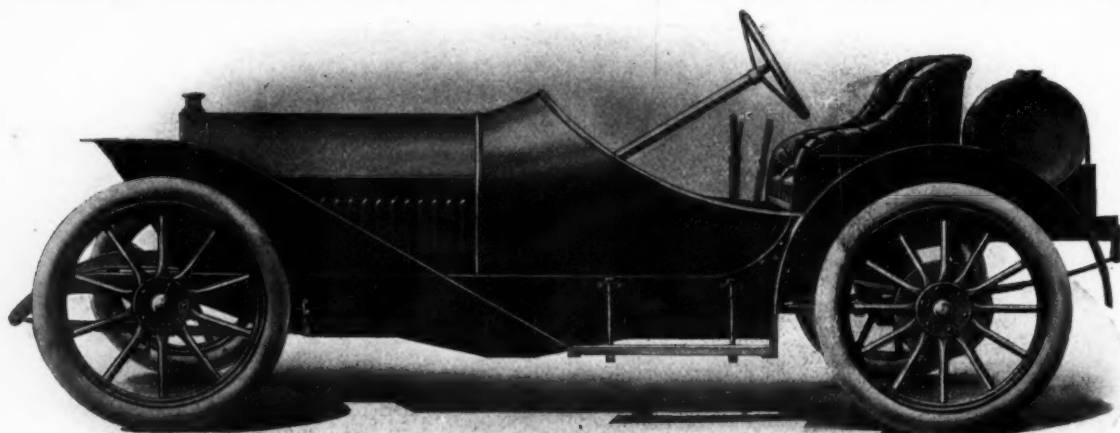
1908



MARION FLYER RUNABOUT, 4 CYLINDERS, 24-H.P., PRICE \$2,250.
Marion Motor Car Co., Indianapolis, Ind.

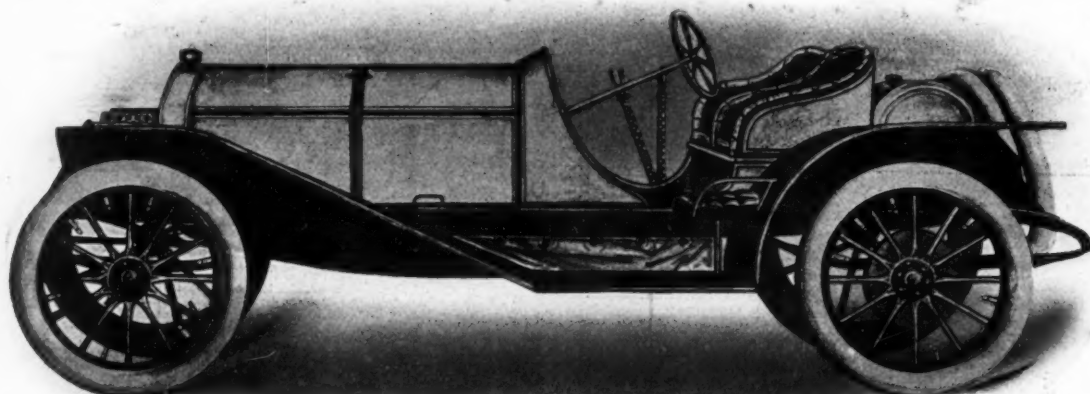


AMERICAN ROADSTER, 4 CYLINDERS, 40-H.P., PRICE \$3,250.
American Motor Car Co., Indianapolis, Ind.

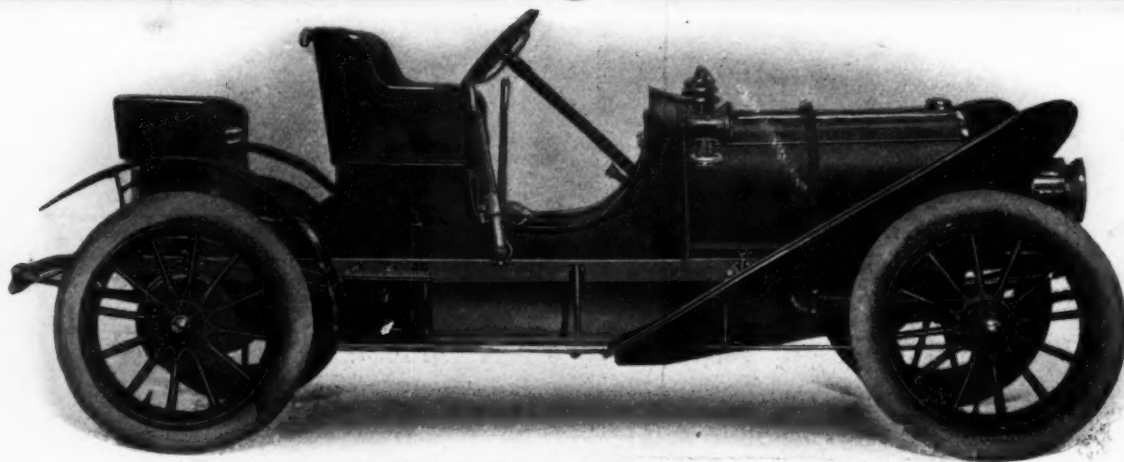


DRAGON ROADSTER, 4 CYLINDERS, 35-H.P., PRICE \$1,850.
Dragon Automobile Co., Philadelphia.

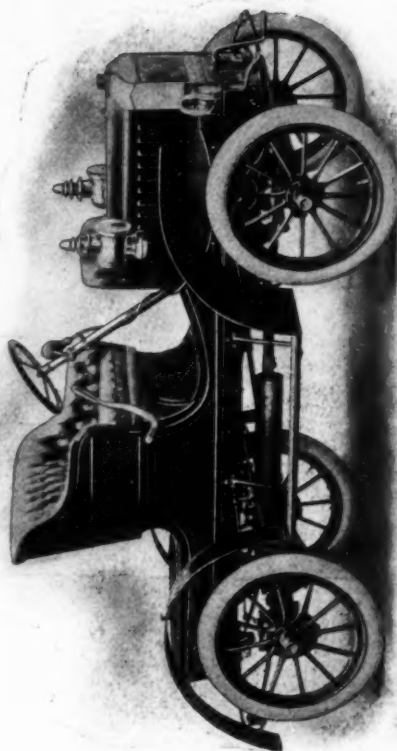
1908



COLT 6-CYLINDER RUNABOUT, 40-H.P., PRICE \$1,500,
Colt Runabout Co., 1876 Broadway, New York.



RAMBLER RUNABOUT, 4-CYLINDER, 40-H.P., PRICE \$2,250.
Thomas B. Jeffery Co., Kenosha, Wis.
This car is not exhibited at the Palace Show, but will be shown in Chicago.

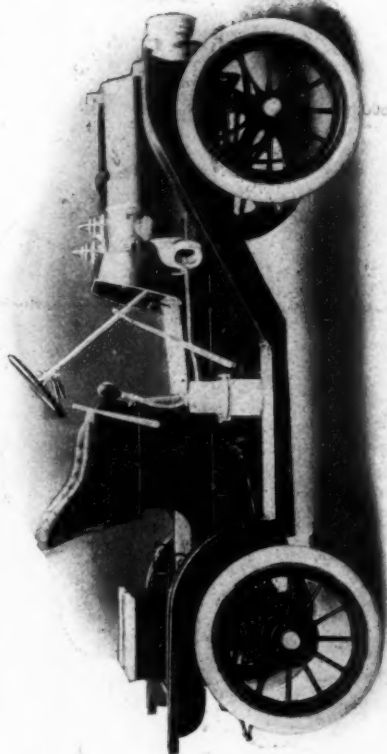


MAXWELL RUNABOUT, 2 CYLINDERS, 12-14-H.P., PRICE \$826.
Maxwell-Briscoe Motor Co., Tarrytown, N. Y.

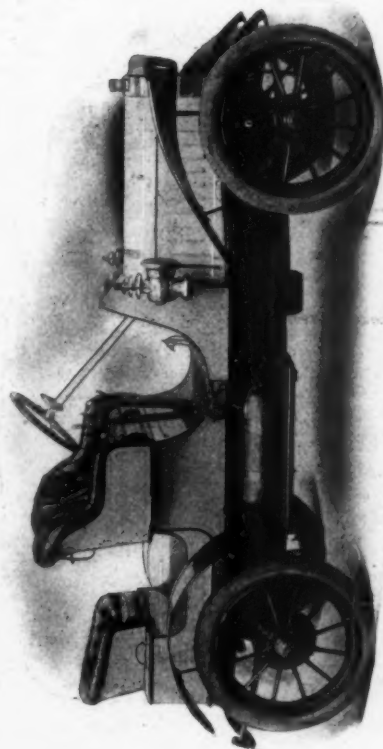


LAMBERT RUNABOUT, 2 CYLINDERS, 18-H.P., PRICE \$600.
Buckeye Manufacturing Co., Anderson, Ind.

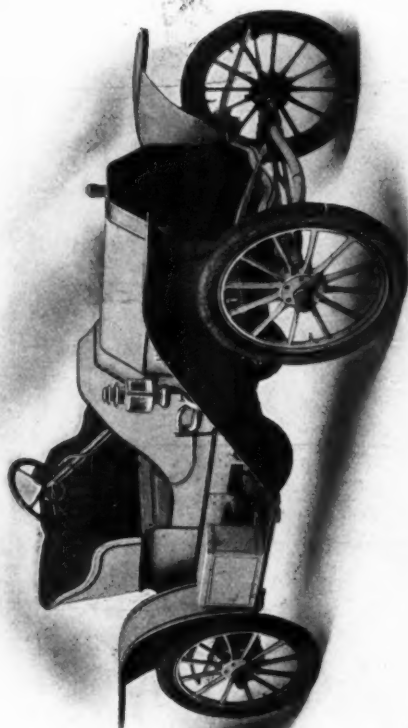
1908



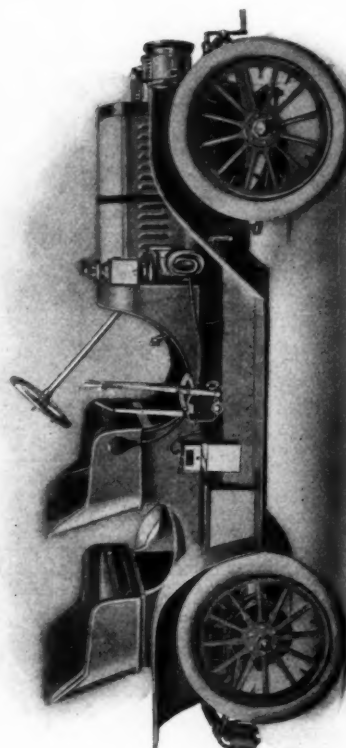
REO ROADSTER, 2 CYLINDERS, 18-20-H.P., PRICE \$1,000.
R. M. Owen & Co., 1759 Broadway, New York.



MITCHELL TOURABOUT, 4 CYLINDERS, 20-H.P., PRICE \$1,250.
Mitchell Motor Car Co., Racine, Wis.

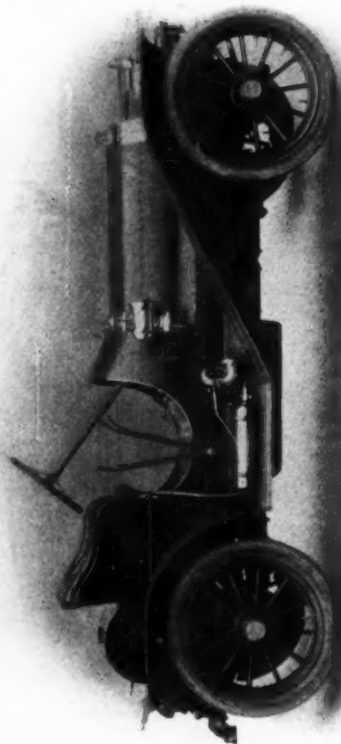


OVERLAND RUNABOUT, 4 CYLINDERS, 18-22-H.P., PRICE \$1,250.
Overland Automobile Co., Indianapolis, Ind.

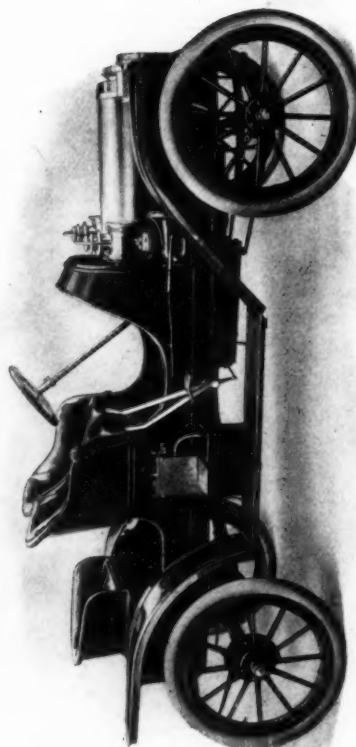


FRAYER-MILLER COMBINATION RUNABOUT, 24-H.P., PRICE \$2,500.
Oscar Lear Auto Co., Springfield, O.

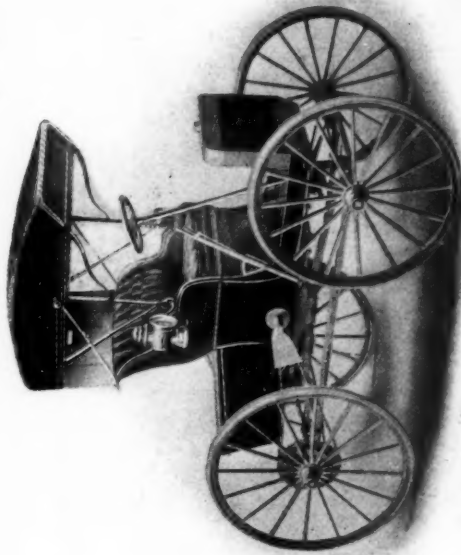
1908



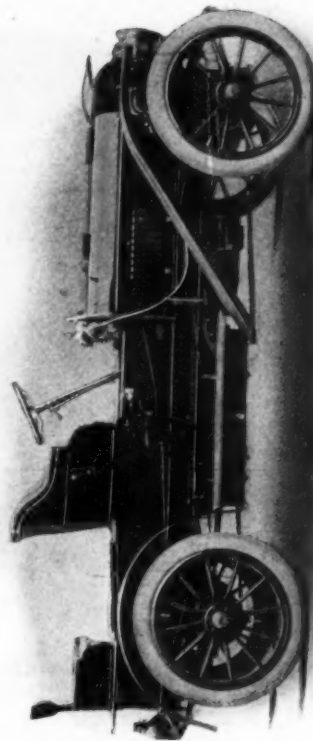
NATIONAL MODEL N ROADSTER, 4 CYLINDERS, 2 PASSENGERS,
PRICE \$3,700.
National Motor Vehicle Co., Indianapolis, Ind.



CAMERON MODEL 8 RUNABOUT, 4 CYLINDERS, 16-H.P., PRICE \$1,050.
Cameron Car Co., Brockton, Mass.

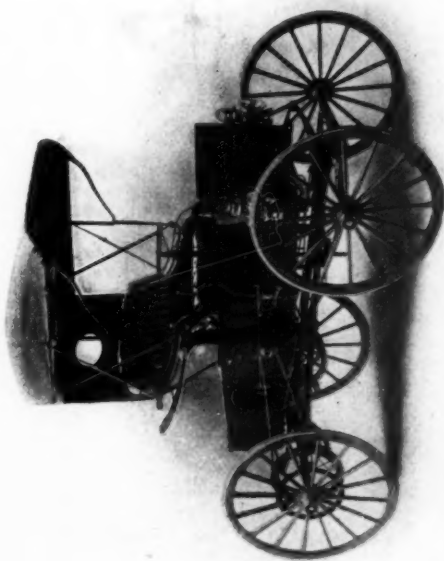


SCHACHT AUTO RUNABOUT, 12-H.P., PRICE \$680.
Schacht Manufacturing Co., Cincinnati, O.

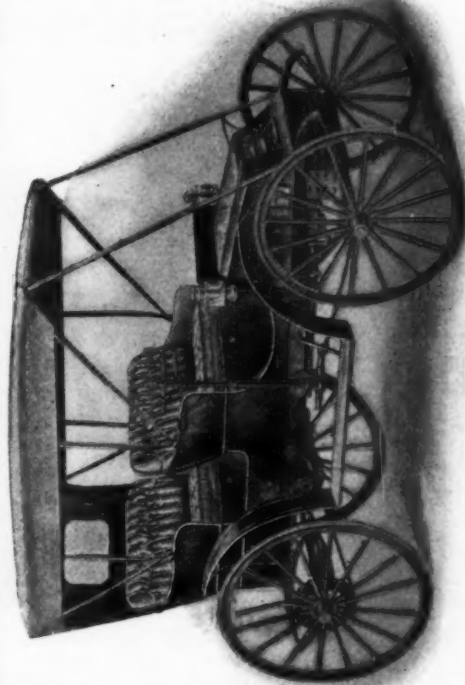


LANE STEAMER RUNABOUT, 30-H.P., PRICE \$3,000.
Lane Motor Vehicle Co., Poughkeepsie, N. Y.

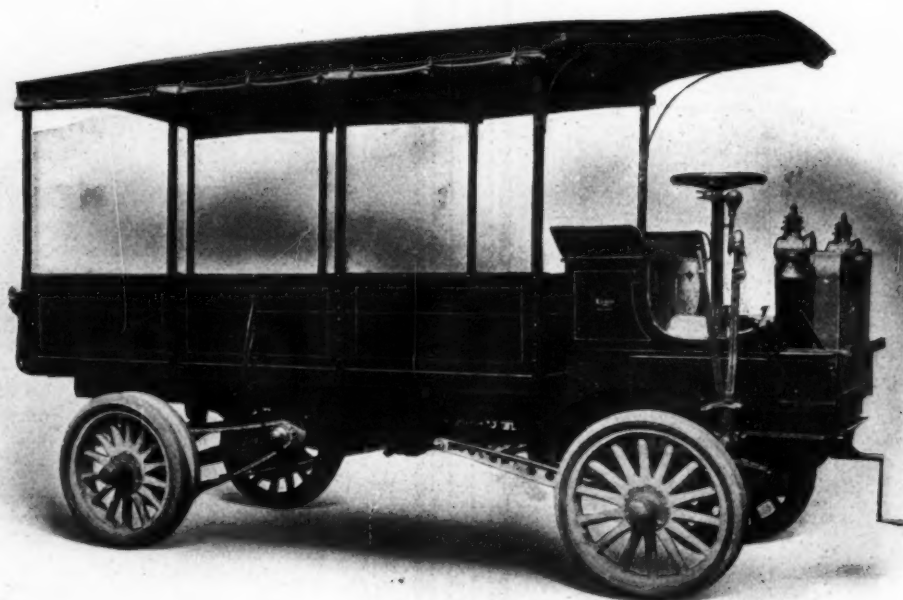
1908



HATFIELD BUGGYABOUT MODEL D-E, 2 CYLINDERS, 12-H.P.,
PRICE \$600.
Hatfield Motor Vehicle Co., Miamisburg, O.

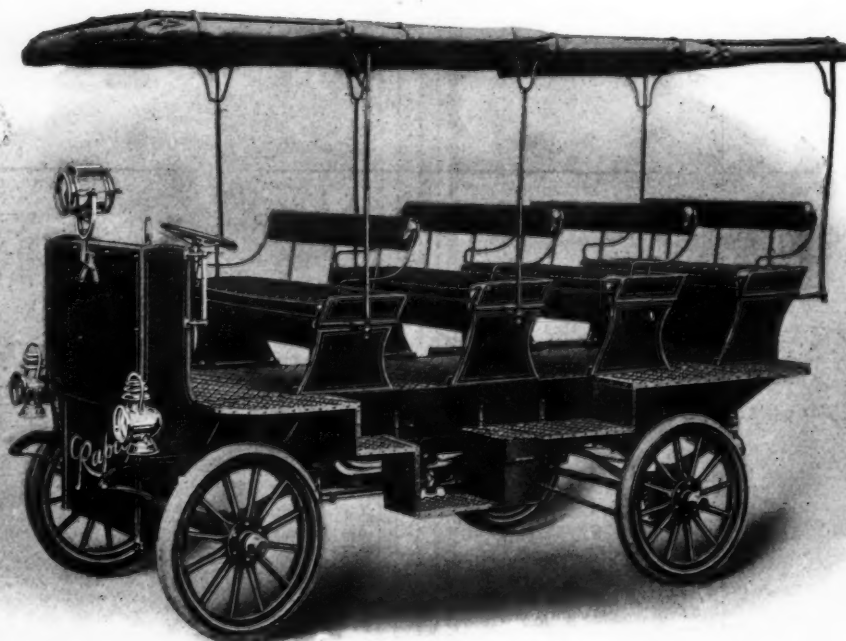


RELIABLE-DAYTON SURREY, 2 CYLINDERS, 15-H.P., PRICE \$925.
Reliable Dayton Motor Car Co., Chicago.

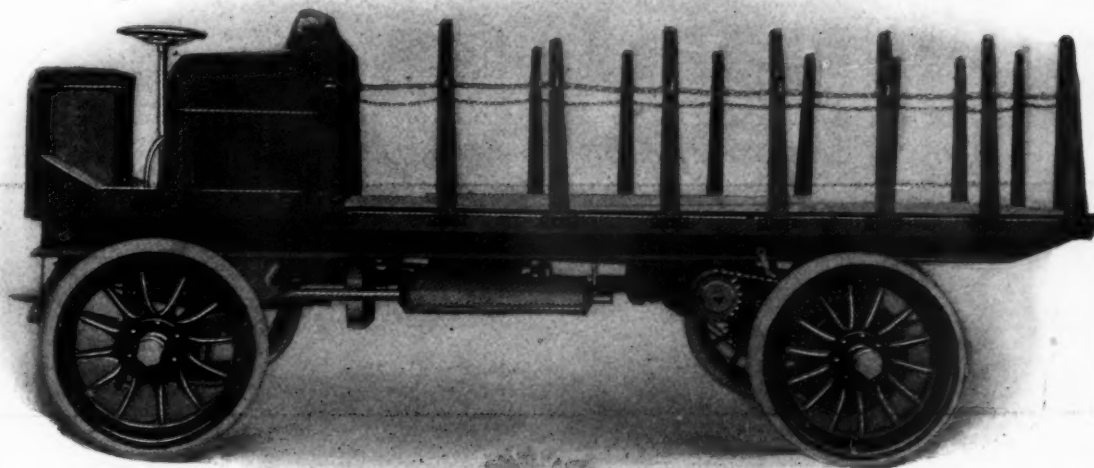


LOGAN THREE-TON TRUCK, MODEL S, WITH OPEN BODY, 4 CYLINDERS, 40-H.P.
Logan Construction Co., Chillicothe, O.

1908



RAPID 12-PASSENGER CAR, MODEL E-132, 24-H.P., PRICE \$2,000.
Rapid Motor Vehicle Co., Pontiac, Mich.

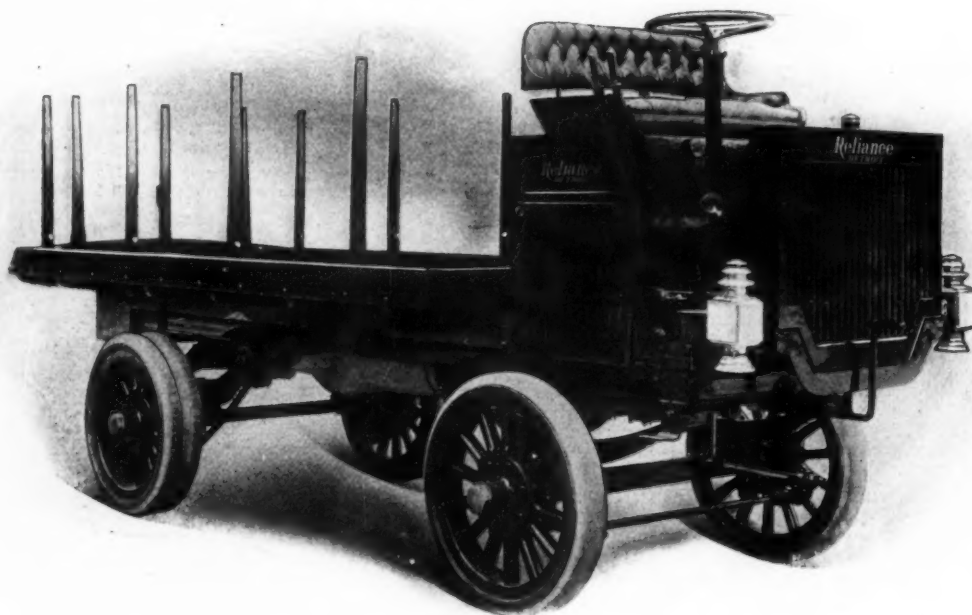


FRAYER-MILLER TRUCK, AIR-COOLED, 4 CYLINDERS, 24-H.P., PRICE \$3,000.
Oscar Lear Automobile Co., Columbus, O.

1908

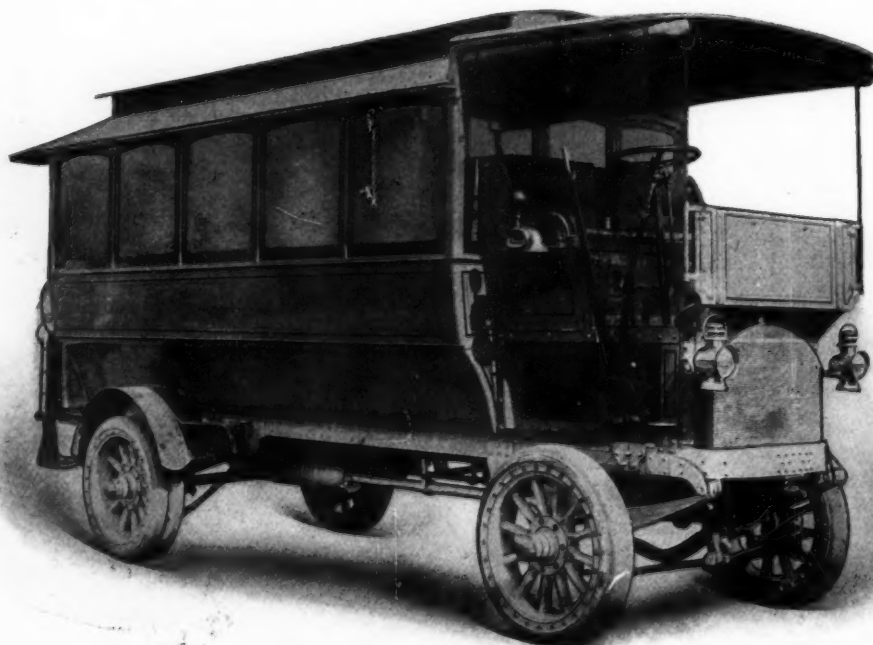


MITCHELL OPEN DELIVERY VEHICLE, 4 CYLINDERS, 20-H.P., PRICE \$2,000.
Mitchell Motor Car Co., Racine, Wis.



RELIANCE OPEN DELIVERY VEHICLE, TWO-CYCLE, 4 CYLINDERS, 60-H.P., PRICE \$4,400.
Reliance Motor Car Co., Detroit, Mich.

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MANHATTAN 22-PASSENGER 'BUS, 4 CYLINDERS, 50-H.P., PRICE \$6,500.
Mack Brothers Motor Car Co., Allentown, Pa.

GRAND CENTRAL PALACE 1908 MODELS

COSTING LESS THAN \$1,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	Weight
BRUSH Model 2-A	\$800	12	2	Touring	4	Storage Battery	Cone	Planetary	Side chains	88	1,200
Model 1-B	580	6	1	Piano Box	2	Storage Battery	Cone	Planetary	Side chains	74	900
CAMERON, Model 6	850	10	4	Runabout	2	Storage Battery	Cone	Transmission	Shaft	84	1,000
FORD	800	20	4	Touring	5	Storage Battery		Planetary	Shaft	97	1,000
FORD	600	20	4	Runabout	3	Storage Battery		Planetary	Shaft	97	1,000
HATFIELD, Model D-E	600	12	2	Buggy	2	Storage Battery	Disc	Friction	Side cables	78	900
HOLSMAN, Model 10	750	12	2	Buggy	2	Storage Battery	Disc	Friction	Steel cables	75	940
Model 11	800	12	2	Buggy	4	Storage Battery	Disc	Friction	Steel cables	75	1,035
KIBLINGER, Model A	250	4	1	Buggy	2	Storage Battery	Disc	Planetary	Side chains	65	600
Model B	300	6	1	Buggy	3	Storage Battery	Disc	Planetary	Side chains	65	650
LAMBERT, Model 18	800	18	2	Runabout	3	Storage Battery	Disc	Friction	Single chain	95	1,350
MAXWELL, Model LC	825	12	2	Runabout	2	Storage Battery	Disc	Planetary	Shaft	72	1,500
REO, Model B	650	10	1	Touring	4	Storage Battery	Disc	Planetary	Single chain	78	1,500
RELIABLE DAYTON, Model E	780	15	2	Runabout	2	Storage Battery	External contracting	Progressive	Side chains	84	1,200
Model F	925	15	2	Surrey	4	Storage Battery	External contracting	Progressive	Side chains	98	1,500
SCHACHT, Model H	640	12	2	Buggy	2	Storage Battery	Disc	Friction	Side chains	65	900
Model K	680	12	2	Buggy	2	Storage Battery	Disc	Friction	Side chains	65	900
Model P	800	12	2	Buggy	2	Storage Battery	Disc	Friction	Side chains	65	900

COSTING BETWEEN \$1,000 AND \$1,500

ATLAS, Model R	\$1,400	24	4	Runabout	4	Storage Battery	Disc	Planetary	Shaft	90	1,500
CAMERON, Model 8	1,050	10	4	Runabout	3	Storage Battery	Cone	Planetary	Shaft	98	1,150
CARTER, Model A	1,350	22	2	Touring	5	Storage Battery		Friction	Chain	96	1,800
FORD	1,000	20	4	Cab	5	Storage Battery		Planetary	Shaft	97	1,600
JACKSON, Model C	1,350	20	2	Touring	5	Storage Battery	Disc	Planetary	Chain	96	2,000
LAMBERT, Model S	1,275	24	2	Touring	5	Storage Battery	Disc	Friction	Side chains	94	1,800
MAXWELL, Model NC	1,350	10	2	Runabout	2	Storage Battery	Disc	Progressive	Shaft	90	1,500
Model HC	1,450	10	2	Touring	5	Storage Battery	Disc	Progressive	Shaft	90	1,500
MITCHELL, Model G	1,250	20	4	Runabout	3	Storage Battery	Cone	Progressive	Shaft	92	1,650
Model H	1,000	20	4	Runabout	2	Storage Battery	Cone	Progressive	Shaft	93	1,650
MOLINE, Model H	1,250	18	2	Touring	5	Storage Battery	Disc	Planetary	Chain	93	1,800
OVERLAND, Model 24	1,25	18	4	Runabout	2	Storage Battery	Expanding	Planetary	Shaft	96	1,500
RELIABLE DAYTON, E-special	1,10	15	2	Coupe	2	Storage Battery	External contracting	Progressive	Side chains	84	1,300
REO, Model C	1,075	18	2	Touring	4	Storage Battery	Disc	Planetary	Chain	94	1,500
Model A	1,000	18	2	Touring	5	Storage Battery	Disc	Planetary	Chain	94	1,500

COSTING BETWEEN \$1,500 AND \$1,900

ATLAS, Model D.....	\$1,900	34	3	Runabout.....	4	Storage Battery..	Cone.....	Selective.....	Shaft.....	106	2,000
COLT.....	1,500	40	6	Runabout.....	2	H. T. Magneto.....	Cone.....	Selective.....	Shaft.....	105	1,800
DRAGON, Roadster.....	1,850	35	4	Runabout.....	2	Storage Battery.....	Cone.....	Progressive.....	Shaft.....	96	1,600
EAGLE, Model O.....	1,550	20	3	Runabout.....	2	Storage Battery.....	Disc.....	Progressive.....	Shaft.....	100	1,750
Model N.....	1,700	20	3	Touring.....	4	Storage Battery.....	Disc.....	Progressive.....	Shaft.....	100	1,750
Model M.....	1,900	20	3	Touring.....	5	Storage Battery.....	Disc.....	Progressive.....	Shaft.....	100	1,750
JACKSON, Model D.....	1,500	20	2	Touring.....	5	Storage Battery.....	Disc.....	Selective.....	Shaft.....	106	2,200
LANE STEAMER, Model 8-2.....	1,800	20	2	Runabout.....	2				Chain.....	97	1,600
MAXWELL, Model D.....	1,750	24	4	Touring.....	4	Storage Battery.....	Disc.....	Progressive.....	Shaft.....	96	2,100
PULLMAN, Model H.....	1,875	24	4	Touring.....	5	Storage Battery.....	Cone.....	Selective.....	Shaft.....	100	1,750
STODDARD-DAYTON, Model 8-B.....	1,700	18	4	Runabout.....	4	Storage Battery.....	Cone.....	Selective.....	Shaft.....	92	1,500
Model HF.....	1,700	18	4	Coupe.....	2	Storage Battery.....	Cone.....	Selective.....	Shaft.....	88	1,400

COSTING BETWEEN \$2,000 AND \$2,500

ATLAS, Model E.....	2,400	40	4	Touring.....	5	Storage Battery.....	Cone.....	Selective.....	Shaft.....	114	2,400
CONTINENTAL, Model A.....	2,400	30	4	Runabout.....	3	Storage Battery.....	Disc.....	Selective.....	Shaft.....	100	2,000
DRAGON TOURING.....	2,100	24	4	Touring.....	5	Storage Battery.....	Cone.....	Progressive.....	Shaft.....	104	1,950
JACKSON, Model E.....	2,000	35	4	Runabout.....	4	Storage Battery.....	Disc.....	Selective.....	Shaft.....	111	2,400
LAMBERT, Model M.....	2,000	35	4	Touring.....	5	Storage Battery.....	Disc.....	Friction.....	Shaft.....	105	1,900
KISSELKAR.....	2,000	35	4	Touring.....	7	Storage Battery.....	Cone.....	Selective.....	Shaft.....	108	2,400
KISSELKAR.....	2,200	35	4	Limousine.....	7	Storage Battery.....	Cone.....	Selective.....	Shaft.....	108	2,800
KLINK—Touring.....	2,000	30	4	Touring.....	5	Storage Battery.....	Cone.....	Selective.....	Shaft.....	110	2,100
LANE STEAMER, Model 8-5.....	2,000	20	2	Touring.....	5	.....	.....	.....	Chain.....	97	2,300
MORA RACY.....	2,350	24	4	Runabout.....	3	H. T. Magneto.....	Cone.....	Selective.....	Shaft.....	98	1,750
MARION, Model 8.....	2,250	24	4	Roadster.....	3	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	102	1,850
MITCHELL, Model I.....	2,000	35	4	Touring.....	5	Storage Battery.....	Cone.....	Progressive.....	Shaft.....	112	2,505
MOLINE, Model S.....	2,00	24	4	Touring.....	5	Storage Battery.....	Cone.....	Progressive.....	Shaft.....	100	2,050
PREMIER.....	2,250	24	4	Touring.....	5	Storage Battery.....	Disc.....	Selective.....	Shaft.....	108	2,270

COSTING BETWEEN \$2,500 AND \$3,000

CONTINENTAL, Model B	\$2,700	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	110	2,150
CRAWFORD, Model D	2,500	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	112	2,300
Model E	2,650	35	4	Touring	5	Magneto	Disc	Selective	Shaft	106	2,800
DOLSON, Model H	2,500	40	4	Touring	5	Storage Battery	Band	Selective	Shaft	113	2,700
DORRIS, Model C	2,500	30	4	Touring	5	Storage Battery	Disc	Selective	Shaft	106	2,350
EAGLE	2,800	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	110	2,400
EAGLE	2,500	40	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	100	2,250
FRAYER-MILLER—Phila. R'n'b'l	2,500	24	4	Runabout	2	Storage Battery	Cone	Selective	Shaft	100	1,800
Combination	2,700	24	4	Combination	3-4	Storage Battery	Cone	Selective	Shaft	100	2,000
Model B	2,750	24	4	Touring	5	Storage Battery	Internal Expanding	Selective	Shaft	100	2,200
GLIDE, Model G	2,700	36	4	Touring	5	Magneto	Disc	Selective	Shaft	120	2,900
GREAT SMITH	2,500	30	4	Touring	5	Storage Battery	Disc	Selective	Shaft	107	2,000
GROUT	2,500	34	4	Touring	5	Storage Battery	Cone	Progressive	Side chains	115	2,600
JACKSON, Model E	2,500	35	4	Touring	5	Storage Battery	Disc	Selective	Shaft	111	2,450
IMPERIAL	2,250	30	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	108	2,400
IMPERIAL	2,650	30	4	Runabout	4	H. T. Magneto	Disc	Selective	Shaft	108	2,525
LAMBERT, Model R	2,500	35	4	Touring	7	Storage Battery	Disc	Friction	Side chains	106	2,700
MARION, Model 6-30	2,500	30	6	Roadster	2	H. T. Magneto	Disc	Selective	Shaft	102	1,900
MORA, Tourer	2,500	24	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	103	1,900
MITCHELL	2,800	34	4	Limousine	5	Storage Battery	Cone	Progressive	Shaft	112	3,000
MOLINE, Model A	2,500	34	4	Touring	5	Storage Battery	Cone	Progressive	Shaft	110	2,650
NAPIER	2,300	20	4	Runabout	2	Storage Battery	Cone	Selective	Shaft	90	2,800
PREMIER	2,650	30	4	Touring	5	L. T. Magneto	Disc	Selective	Shaft	108	3,400
PULLMAN, Model 6-30	2,750	30	6	Runabout	3	Storage Battery	Cone	Selective	Shaft	104	1,800
STODDARD-DAYTON, Model 8-F	2,500	30	4	Touring	5	Storage Battery	Cone	Selective	Shaft	113	2,600
Model 8-K	2,500	30	4	Runabout	3	Storage Battery	Cone	Selective	Shaft	113	2,500
Model 8-N	2,500	18	4	Landauette	3	Storage Battery	Cone	Selective	Shaft	92	2,000
WAYNE	2,700	24	4	Touring	5	Storage Battery	Cone	Selective	Shaft	107	2,400

GRAND CENTRAL PALACE 1908 MODELS

COSTING BETWEEN \$3,000 AND \$3,500

CAR	Price	H. P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
AMERICAN.....	\$3,250	40	4	Touring.....	5	H. T. Magneto.....	Cone.....	Progressive.....	Shaft.....	106	.....
CONTINENTAL, Model C.....	3,000	35	4	Touring.....	6	Magneto.....	Disc.....	Selective.....	Shaft.....	120	2,500
CRAWFORD, Model C.....	3,150	40	4	Touring.....	5	Magneto.....	Disc.....	Selective.....	Shaft.....	114	2,800
DOLSON, Model F.....	3,250	60	4	Touring.....	7	Storage Battery.....	Band.....	Selective.....	Shaft.....	127	3,200
GEARLESS, Model 60.....	3,250	60	4	Runabout.....	3	Magneto.....	Expanding.....	Gearless.....	Shaft.....	126	3,000
GLIDE, Model 45.....	3,000	45	4	Touring.....	5	Magneto.....	Disc.....	Selective.....	Shaft.....	120	3,000
LANE STEAMER, 8-3.....	3,000	30	2	Runabout.....	2	Storage Battery.....	Disc.....	Chain.....	Shaft.....	113	2,000
MARMON, Model G.....	3,000	35	4	Touring.....	5	Storage Battery.....	Disc.....	Selective.....	Shaft.....	104	.....
MAXWELL, Model M.....	3,000	40	4	Touring.....	5	Storage Battery.....	Disc.....	Selective.....	Shaft.....	104	2,750
MOON, Model C.....	3,250	30	4	Roadster.....	3	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	110	2,500
PENNSYLVANIA, Model C.....	3,000	50	4	Touring.....	5	Magneto.....	Cone.....	Selective.....	Shaft.....	114	2,800
PENNSYLVANIA.....	3,000	50	4	Limousine.....	5	Magneto.....	Cone.....	Selective.....	Shaft.....	114	.....
PULLMAN, Model 1.....	3,250	40	4	Touring.....	5	Storage Battery.....	Cone.....	Selective.....	Shaft.....	118	3,000
Model 4-40.....	3,000	40	4	Runabout.....	3	Storage Battery.....	Cone.....	Selective.....	Shaft.....	108	2,200

COSTING BETWEEN \$3,500 AND \$4,500

ACME, Model XVIII.....	\$4,000	30	4	Touring.....	7	H. T. Magneto.....	Cone.....	Selective.....	Side chains.....	115	3,500
Model XVI.....	3,500	30	4	Touring.....	5	H. T. Magneto.....	Cone.....	Selective.....	Side chains.....	102	2,750
ALLEN-KINGSTON, Model D.....	3,900	40	4	Runabout.....	4	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	121	3,100
Model C.....	4,000	40	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	126	3,500
AMERICAN MORS.....	3,500	40	4	Landulette.....	5	L. T. Magneto.....	Cone.....	Selective.....	Side chains.....	103	3,100
AMERICAN MORS.....	4,000	40	4	Touring.....	7	L. T. Magneto.....	Cone.....	Selective.....	Side chains.....	120	3,360
AMERICAN MORS.....	4,250	40	6	Touring.....	7	L. T. Magneto.....	Cone.....	Selective.....	Shaft.....	127	3,500
AMERICAN SIMPLEX.....	4,000	50	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	117	2,800
CATER TWO-ENGINE.....	3,500	24-60	8	Touring.....	7	Storage Battery.....	Cone.....	Selective.....	Shaft.....	114	3,100
CRAWFORD, Model F.....	3,600	50	4	Touring.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	118	3,000
CLEVELAND.....	3,500	40	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	122	.....
FRAYER-MILLER, Model C.....	3,500	40	4	Touring.....	7	H. T. Magneto.....	Internal Expanding.....	Selective.....	Shaft.....	120	3,000
FRAYER-MILLER.....	4,000	36	6	Touring.....	5	Storage Battery.....	Internal Expanding.....	Selective.....	Shaft.....	120	2,750
FRONTENAC.....	4,000	40	4	Touring.....	7	H. T. Magneto.....	Band.....	Progressive.....	Shaft.....	112	3,300
GAETHE, Model XV.....	3,500	35	4	Touring.....	7	Storage Battery.....	Cone.....	Progressive.....	Shaft.....	112	2,700
GARFORD, Model A.....	3,500	30	4	Touring.....	5	Storage Battery.....	Cone.....	Progressive.....	Shaft.....	104	2,500
Model B.....	4,000	40	4	Touring.....	7	Storage Battery.....	Cone.....	Progressive.....	Shaft.....	114	2,750
GEARLESS.....	4,000	75	6	Touring.....	6	Magneto.....	Expanding.....	Gearless.....	Shaft.....	126	3,450
GEARLESS.....	3,500	60	4	Touring.....	5	Magneto.....	Expanding.....	Gearless.....	Shaft.....	126	3,250
GLIDE, Model H.....	3,500	54	6	Touring.....	5	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	132	4,000
LANE STEAMER, Model 8-7.....	3,500	30	2	Touring.....	7	Storage Battery.....	Disc.....	Chain.....	Shaft.....	110	3,500
MOON, Model D.....	3,750	30	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	121	2,800
MORA, Racetype.....	3,500	42	6	Runabout.....	3	H. T. Magneto.....	Cone.....	Selective.....	Shaft.....	105	2,250
Tourer.....	3,600	42	6	Touring.....	5	H. T. Magneto.....	Cone.....	Selective.....	Shaft.....	114	2,500
MARMON, Model H.....	3,500	35	4	Touring.....	5	Storage Battery.....	Disc.....	Selective.....	Shaft.....	114	.....
Model H.....	3,500	40	4	Touring.....	5	Magneto.....	Disc.....	Selective.....	Shaft.....	114	.....
NATIONAL, Model K.....	3,500	.....	4	Touring.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	112	.....
Model N.....	3,700	.....	4	Roadster.....	2	Magneto.....	Cone.....	Selective.....	Shaft.....	102	.....
Model R.....	4,200	.....	6	Touring.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	116	.....
PREMIER.....	3,750	45	6	Touring.....	7	L. T. Magneto.....	Disc.....	Selective.....	Shaft.....	124	3,000
PULLMAN, Model J.....	3,750	40	4	Touring.....	7	Storage Battery.....	Cone.....	Selective.....	Shaft.....	118	3,200
STODDARD-DAYTON, Model 8-F.....	3,750	30	4	Limousine.....	5	Storage Battery.....	Cone.....	Selective.....	Shaft.....	113	3,000

COSTING BETWEEN \$4,500 AND \$5,500

AUSTIN, Model L-X-T.....	\$4,500	60	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	124	3,600
ACME, Model XX.....	4,500	45	6	Touring.....	5	H. T. Magneto.....	Cone.....	Selective.....	Side chains.....	126	3,500
ALLEN-KINGSTON, Model E.....	5,000	40	4	Limousine.....	5	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	126	.....
CLEVELAND.....	4,500	40	4	Limousine.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	122	.....
CRAWFORD, Model F.....	4,500	50	4	Limousine.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	118	3,400
DE LUXE.....	5,000	40	4	Touring.....	7	H. T. Magneto.....	Cone.....	Selective.....	Shaft.....	121	.....
ELLSWORTH.....	.....	40	4	Touring.....	7	H. T. Magneto.....	Band.....	Selective.....	Shaft.....	112	.....
FRONTENAC.....	5,000	40	4	Limousine.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	124	3,600
NATIONAL, Model N.....	4,800	.....	4	Limousine.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	112	.....
Model T.....	5,000	.....	6	Touring.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	127	.....
RAINIER, Model D.....	4,500	45	4	Touring.....	7	L. T. Magneto.....	Disc.....	Selective.....	Shaft.....	110	2,850
SHAWMUT, Model A.....	4,750	40	4	Roadster.....	3	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	108	2,675
Model B.....	5,000	40	4	Touring.....	5	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	112	3,000
STODDARD-DAYTON, Model 8-G.....	4,500	50	6	Touring.....	5	Magneto.....	Cone.....	Selective.....	Shaft.....	128	3,500
WELCH, Model 4-L.....	4,500	50	4	Touring.....	5	Magneto.....	Individual.....	Selective.....	Shaft.....	128	3,150

COSTING \$5,500 AND ABOVE

AUSTIN, Model L-X-R.....	\$5,500	60	4	Combination.....	4	Magneto.....	Disc.....	Selective.....	Shaft.....	124	3,400
Model L-X-L.....	5,500	60	3	Limousine.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	124	3,800
Model X-C-R.....	6,000	90	6	Combination.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	134	3,600
Model X-C-T.....	6,000	90	6	Touring.....	6	Magneto.....	Disc.....	Selective.....	Shaft.....	134	3,800
Model X-C-L.....	7,000	90	6	Limousine.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	134	3,900
ALLEN-KINGSTON, Model F.....	5,500	40	4	Limousine.....	5	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	126	.....
CHADWICK.....	5,500	50	6	Touring.....	7	H. T. Magneto.....	Cone.....	Selective.....	Side chains.....	126	.....
WAPIER.....	6,500	60	6	Touring.....	7	H. T. Magneto.....	Cone.....	Selective.....	Shaft.....	126	3,400
RAINIER.....	5,500	45	4	Limousine.....	7	L. T. Magneto.....	Disc.....	Selective.....	Shaft.....	110	.....
SHAWMUT, Model B.....	5,750	40	4	Tour'g Lim's'e.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	108	.....
Model D.....	6,500	40	4	Limousine.....	7	H. T. Magneto.....	Disc.....	Selective.....	Shaft.....	126	.....
WELCH, Model 4-L.....	5,500	50	4	Limousine.....	5	Magneto.....	Individual.....	Selective.....	Shaft.....	128	3,400
Model 6-L.....	6,000	70	6	Touring.....	5	Magneto.....	Individual.....	Selective.....	Shaft.....	138	3,450
Model 6-I.....	7,000	70	6	Limousine.....	5	Magneto.....	Individual.....	Selective.....	Shaft.....	138	3,750

NOTE.—To simplify the table, the multiple disc type of clutch has been designated "disc," this designation being used also for light runabouts having planetary change speed gear with which a single disc is usually employed. On several machines a double ignition system is employed; in such cases "mag-neto" only is specified.

Where touring and runabout bodies or limousine and landaulet bodies are fitted on the same chassis without change in price, only touring and limousine are given in each case.

COMMERCIAL VEHICLES AT THE GRAND CENTRAL PALACE

COSTING FROM \$800 TO \$6,500

CAR	Price	H.P.	Cylinders	Body	Ignition	Clutch	Transmission	Drive	Wheel-base	Weight
BRUSH, Model 2-B.....	\$800	12	2	Delivery.....	Storage Battery	Cone.....	Planetary.....	Side chains..	88	1,300
CARTERCAR, Model C.....	1,350	22	2	Delivery.....	Storage Battery	Disc.....	Planetary.....	Chain.....	96	1,000
FRAYER-MILLER.....	3,000	24	4	Truck.....	Storage Battery	Cone.....	Selective.....	Shaft.....		
GAETH, Model K.....	1,500	12	1	Delivery.....	Storage Battery	Band.....	Planetary.....	Side chains..	103	2,000
LOGAN, Model S.....		40	4	3-ton truck.....	Storage Battery	Disc.....	Selective.....	Side chains..	120	4,100
Model T.....		30	4	1½-ton truck.....	Storage Battery	Ring.....	Selective.....	Side chains..	96	2,100
Model R.....		30	4	1,500-lb. truck.....	Storage Battery	Ring.....	Selective.....	Single chain..	108	1,700
Model N.....		8	2	500-lb. truck.....	Storage Battery	Ring.....	Selective.....	Single chain..	85	1,350
MANHATTAN.....	6,500	50	4	22-passenger bus.....	H. T. Magneto.....	Cone.....	Selective.....	Side chain..	168	
MANHATTAN.....	5,500	50	4	20-passenger bus.....	H. T. Magneto.....	Cone.....	Selective.....	Side chain..	156	
MANHATTAN.....	5,100	50	4	8-ton truck.....	H. T. Magneto.....	Cone.....	Selective.....	Side chain..	168	
MITCHELL.....	2,000	20	4	Truck.....	Storage Battery	Cone.....	Selective.....	Worm.....	108	2,200
RELIABLE DAYTON, Model G.....	1,975	18	2	Delivery.....	Storage Battery	Band.....	Progressive.....	Side chain..	92	1,800
RAPID, Model E-62.....	1,600	24	2	Truck.....	Storage Battery	Disc.....	Planetary.....	Side chains..	90	2,680
Model E-11.....	1,650	24	2	Delivery.....	Storage Battery	Disc.....	Planetary.....	Side chains..	86	
Model E-132.....	1,800	24	2	Truck.....	Storage Battery	Disc.....	Planetary.....	Side chains..	90	3,050
Model E-152.....	2,000	24	2	16-passenger bus.....	Storage Battery	Disc.....	Planetary.....	Side chains..	90	
Model 222.....	2,400	24	2	1-ton truck.....	Storage Battery	Disc.....	Planetary.....	Side chains..	90	
RELIANCE, Model G.....	2,750	30	2	3-ton truck.....	Storage Battery	Cone.....	Selective.....	Side chains..	108	3,800
Model H.....	3,500	45	3	4-ton truck.....	Storage Battery	Cone.....	Selective.....	Side chains..	108	3,800
Model K.....	4,400	60	4	Truck.....	Magneto.....	Cone.....	Progressive.....	Side chains..	136	5,500

NOTE.—To simplify the table, the multiple disc type of clutch has been designated "disc," this designation being used also for light runabouts having planetary change speed gear with which a single disc is usually employed. On several machines a double ignition system is employed; in such cases "magneto" only is specified.

TREND OF MOTOR DESIGN.

(Continued from page 550.)

upon it. As a result, it has become the fashion, with the important difference, however, that it is one difficult to change. Just so long as it is easier to sell cars of this type so much easier just that long will makers work along the line of least resistance.

Both Extremes Reached in Powers.

Where motor powers are concerned, it may be said that these are higher and lower than ever before, a statement that may appear enigmatic at first sight. In other words, makers have reached forth to both extremes. Some have realized that the day of the overpowered car is on the wane and are taking advantage of this knowledge to be first to place on the market a more rational type of vehicle, as well as one that will appeal to a greater class of buyers. Others have continued along the same course that they have been following for the past two or three years, that of making their motors constantly larger, and these examples find their extreme in the numerous six-cylinder models to be unveiled. The latter being in the majority of cases merely a 50 per cent. increase in motor size, without other alterations, and not a special design, it follows that these cars represent a corresponding increase in power.

But it is also true that the four-cylinder types have continued to increase in size so that dimensions of 5-inch bore and stroke, or, in excess of that figure, are far more common than those of 4 inches, though nominally powers are no greater in many instances than they were two or three years ago. Cylinder dimensions and compression have been increased more or less during that time, the first-named to the greatest extent of course, but ratings have not gone up correspondingly. The "30" of a few years ago was frequently not even a good "25," but the "30" of to-day is more often a "50" or better. Increasing other factors has made possible a reduction in speed, so that 800 to 1,000 r. p. m. is now an almost universal standard instead of the 1,000 to 1,200 r. p. m. of a few years ago, though the present-day motors are capable of greater flexibility and will consequently speed up to as high a maximum as their predecessors and with better results.

Current Tendencies in Transmission Practice.

Experience having thus far proven the sliding type of change-speed gear to be able to hold its own despite its disadvantages and the claims of superiority of other systems, its use may be said to be practically universal. There have been further improvements in materials conducing to durability, while the adoption of the selective type of operation has to a very great extent

reduced the chance of damage in use. Other factors that have played a very important part in this field have been the anti-friction bearing and the use of some form of simple interlocking device, preventing shifting before the disengagement of the clutch, as well as obviating the possibility of simultaneously engaging two different speeds or reversing unintentionally.

At present its strongest competitor would appear to be the friction type, which has several representatives among the cars shown at the Palace. One of the chief advocates of this system is the Lambert, and its success on the various types of cars turned out by the makers of this line during several years past would appear to substantiate some of the claims made for it. The Cartercar is another upholder of the friction type of change-speed gear, while quite a proportion of the makers of the popular buggyabout also favor it for reasons that are obvious. It represents the maximum of simplicity as well as being fool-proof and enduring to the greatest degree, so that its development on the light car would appear to be a foregone conclusion. There has been at least one strikingly unusual development where the friction type of change-speed gear is concerned, and that is to be found in the advent of the Gearless four and six-cylinder cars which are equipped with an essential of this type, but which operates on the planetary method of speed-changing, in which respect it bears no resemblance to any other form of friction apparatus as used on the car. In fact, it is little more or less than a friction type of planetary transmission, the idea being extremely cleverly worked out with the minimum of parts, all of which are of substantial size and durable nature.

The question of chain or shaft drive seems to have been finally settled in favor of the latter by tacit consent. Except in the lightest types using a single chain drive, the propeller shaft has been developed to a degree of simplicity and reliability where its use is practically universal on cars of light, medium and heavy types, only the smallest and largest being exceptions to the rule.

Development of the Commercial Vehicle.

Although it was with no unusual heralding or advance blowing of horns that it was brought about, a review of the list of exhibitors suffices to show that there are more commercial vehicles at the present show—and more of the heavy type than have ever been brought together before. For instance, there are the Atlas and Reliance using two-cycle motors, the Rapid, Logan, Manhattan, Mitchell and Frayer-Miller, the first two showing heavy trucks, the Rapid and Manhattan sight-seeing cars, while the others build trucks of varying capacities. The Brush Runabout Company and the Motor Car Company, Inc., list a delivery wagon.

SOME DETAILS OF THE PALACE SHOW CARS

GASOLINE PLEASURE VEHICLES.

ACME: Acme Motor Car Company, Reading, Pa.	Main Floor 39
ALLEN-KINGSTON: Allen-Kingston Motor Car Co., Kingston, N. Y.	Main Floor 2
AMERICAN: American Motor Car Co., Indianapolis, Ind.	Main Floor 6
AMERICAN MORS: St. Louis Car Co., Auto Dept., St. Louis, Mo.	Main Floor 10
ATLAS: Atlas Motor Car Co., Springfield, Mass.	Main Floor 30
AUSTIN: Austin Automobile Co., Grand Rapids, Mich.	Main Floor 8
BRUSH: Brush Runabout Co., Detroit, Mich.	1st Gallery 210
CAMERON: Cameron Car Co., Brockton, Mass.	1st Gallery 223
CARTER: Motor Car Co., Inc., Detroit, Mich.	Main Floor 7
CARTER TWO-ENGINE CAR: Carter Motor Car Corporation, Washington, D. C.	1st Gallery 228
CHADWICK: Chadwick Engineering Works, Philadelphia, Pa.	Main Floor 25
CLEVELAND: Cleveland Motor Car Co., 1659 Broadway, New York.	Main Floor 47
COLT RUNABOUT: Colt Runabout Co., 1787 Broadway, New York.	Main Floor 43
CONTINENTAL: Continental Auto Mfg. Co., New Haven, Conn.	Main Floor 3
CRAWFORD: Crawford Automobile Co., Hagerstown, Md.	Main Floor 38
DE LUXE: De Luxe Motor Car Co., Detroit, Mich.	Main Floor 49
DORRIS: Dorris Motor Car Co., St. Louis, Mo.	Main Floor 23
DRAGON: Dragon Automobile Co., Philadelphia, Pa.	Main Floor 34
EAGLE: Eagle Motor Car Co., Middletown, Conn.	Main Floor 50
ELLSWORTH: J. H. Ellsworth, 518 W. Twenty-second street, New York.	1st Gallery 222
FORD: Ford Motor Co., Detroit, Mich.	Main Floor 15
FRAYER-MILLER: Oscar Lear Auto Co., Springfield, O.	Main Floor 51
FRONTENAC: Abendroth & Root Mfg. Co., Newburgh, N. Y.	Main Floor 24
GAETH: Gaeth Automobile Works, Cleveland, O.	Main Floor 29
GARFORD: Garford Motor Car Co. of N. Y., 1840 Broadway, New York.	Main Floor 46
GEARLESS: Gearless Transmission Co., Rochester, N. Y.	Main Floor 28
GLIDE: Bartholomew Co., Peoria, Ill.	Main Floor 9
GREAT SMITH: Smith Automobile Co., Topeka, Kan.	Main Floor 44
GROUT: Grout Brothers, Orange, Mass.	1st Gallery 229
HATFIELD BUGGYABOUT: Hatfield Motor Vehicle Co., Miamisburg, O.	1st Gallery 221
HOLSMAN: Holzman Automobile Co., 662 Monadnock Bldg., Chicago	1st Gallery 226
IMPERIAL: Imperial Motor Car Co., Williamsport, Pa.	Main Floor 37
JACKSON: Jackson Automobile Co., Jackson, Mich.	Main Floor 22
KIBLINGER: W. H. Kiblinger Co., Auburn, Ind.	1st Gallery 214
KISSELKAR: Kissell Motor Car Co., Hartford, Wis.	Main Floor 41
KLINK: Klink Motor Car Mfg. Co., Dansville, N. Y.	Main Floor 45
LAMBERT: Buckeye Mfg. Co., Anderson, Ind.	Main Floor 27

LOGAN: Logan Construction Co., Chillicothe, O.	1st Gallery 208
MARION: Marion Motor Car Co., Indianapolis, Ind.	Main Floor 31
MARMON: Nordyke & Marmon Co., Indianapolis, Ind.	Main Floor 20
MAXWELL: Maxwell-Briscoe Motor Co., Tarrytown, N. Y.	Main Floor 12
MITCHELL: Mitchell Motor Car Co., Racine, Wis.	Main Floor 13
MOLINE: Moline Automobile Co., East Moline, Ill.	Main Floor 19
MOON: Moon Motor Car Co., St. Louis, Mo.	Main Floor 26
MORA: Mora Motor Car Co., Rochester, N. Y.	Main Floor 21
NAPIER: Napier M. C. Co. of America, Jamaica Plain, Mass.	Main Floor 33
NATIONAL: National Motor Vehicle Co., Indianapolis, Ind.	Main Floor 18
OVERLAND: Overland Automobile Co., Indianapolis, Ind.	Main Floor 1
PENNSYLVANIA: Pennsylvania Auto Motor Co., Bryn Mawr, Pa.	Main Floor 4
PREMIER: Premier Motor Mfg. Co., Indianapolis, Ind.	Main Floor 17
PULLMAN: York Motor Car Co., York, Pa.	Main Floor 32
RAINIER: Rainier Motor Car Co., B'way, New York.	Main Floor 48
RELIABLE DAYTON: Reliable Dayton Motor Car Co., Chicago	1st Gallery 220
REO: Reo Motor Car Co., Lansing, Mich.	Main Floor 16
SCHACHT: Schacht Mfg. Co., Cincinnati, O.	1st Gallery 225
SPEEDWELL: Speedwell Motor Car Co., Dayton, O.	Main Floor
STODDARD-DAYTON: Dayton Motor Car Co., Dayton, O.	Main Floor 14
WAYNE: Wayne Automobile Co., Detroit, Mich.	Main Floor 11
WAYNE: Wayne Works, Richmond, Wayne Co., Ind.	1st Gallery 224
WELCH: Welch Motor Car Co., Pontiac, Mich.	Main Floor 36

STEAM PLEASURE VEHICLES.

LANE: Lane Motor Vehicle Co., Poughkeepsie, N. Y.	Main Floor 40
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ELECTRIC PLEASURE VEHICLES.

ANDERSON: Anderson Carriage Co., Detroit, Mich.	1st Gallery 136
LANSDEN: Lansden Co., Newark, N. J.	1st Gallery 212

GASOLINE COMMERCIAL VEHICLES.

ATLAS: Atlas Motor Car Co., Springfield, Mass.	Main Floor 30
CARTER: Motor Car Co., Inc., Detroit, Mich.	Main Floor 7
FRAYER-MILLER: Oscar Lear Auto Co., Springfield, O.	Main Floor 51
LOGAN: Logan Construction Co., Chillicothe, O.	1st Gallery 208
MANHATTAN: Mack Bros. Motor Car Co., Allentown, Pa.	1st Gallery 206
MITCHELL: Mitchell Motor Car Co., Racine, Wis.	Main Floor 13
RAPID: Rapid Motor Vehicle Co., Pontiac, Mich.	1st Gallery 209
RELIANCE: Reliance Motor Car Co., Detroit, Mich.	1st Gallery 207

ELECTRIC COMMERCIAL VEHICLES.

LANSDEN: Lansden Co., Newark, N. J.	1st Gallery 212
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CME.—There will be two Acme cars for 1908, the Acme Motor Car Company, Reading, Pa., having decided to enter the ranks of the six-cylinder advocates. A car of this type, officially known as Type XX, and familiarly as the "Acme Sextuplet," will constitute their new offering. The cylinders measure 4 1-2 by 5 inches and are cast separately, the motor being rated at 45 horsepower at 1,000 r. p. m. Double ignition, with both systems entirely independent of one another, is employed, the Eisemann high-tension magneto having been adopted to fill one of these rôles, while the standard form of accumulator and coil system is used for the other. A four-speed selective change-speed gear is used, running on Hess-Bright ball bearings. The front axle is of Cramp's manganese bronze of I-beam section, and the rear is of nickel-steel of square section.

The other Acme is known as Type XVIII, and is a four-cylinder, 30-horsepower, seven-passenger car, embodying the majority of the features which distinguish the six-cylinder model such as the double ignition with Eisemann magneto, liberal use of ball bearings, and similar commendable features.

Allen-Kingston.—This is a new car claiming Kingston, N. Y., as its home and which made its début with considerable credit to itself at some of the 24-hour races during the present season. It is made by the Allen-Kingston Motor Car Co., and several types will be marketed, though the same standard chassis will be employed in every case. Model C will be a 40-45-horsepower touring car, with a seating capacity of seven. Its power plant consists of a four-cylinder, vertical, water-cooled engine, closely conforming to well-established engineering standards throughout, as is also true of the remainder of the car, no radical deviations from current practice or ideas of a revolutionary nature being embodied in its design or construction. Ignition is by high-tension magneto with an independent single vibrating coil and set of accumulators acting through a distributor as a standby, or to facilitate starting. The clutch is of three-disk type, with cork inserts in the faces of the friction surfaces. A four-speed selec-

tive type of change-speed gear comprises the next essential of the transmission, while final drive is by shaft. The wheelbase of the touring car is 126 inches and its weight 3,300 pounds.

American.—This car, made by the American Motor Car Company, Indianapolis, Ind., is distinguished, in the special roadster type, by a unique form of suspension which permits of bringing the center of gravity of the car very low, without at the same time impairing its clearance. The latter is something of great importance in touring American roads, and though this car appears to be extremely low owing to its unusual suspension, this essential has been amply provided for. It has been designed solely as a roadster capable of high speed and long endurance, and its seating capacity is limited to two persons, the seats being placed quite well to the rear. Ignition is by high-tension magneto and a cone clutch in connection with a progressive type of sliding gear and shaft drive to a floating rear axle completes the transmission. The wheelbase is 106 inches and its weight is 2,200 pounds, which is unusually low for its power. A 40-horsepower standard touring car completes the line, and with the exception of the special suspension and other features peculiar to the runabout, it is of the same design throughout.

American Mors.—One of the surprises that the St. Louis Car Company, St. Louis, builders of the Mors car under license from the French factory, reveals is a six-cylinder, shaft-driven car which embodies numerous features of merit from an engineering point of view, as well as a number of points of considerable interest to the experienced autoist. This is a seven-passenger car with a 127-inch wheelbase and tips the scales at 3,600 pounds. Three other models will be shown, all of the four-cylinder type, the one to first catch the eye doubtless being the specially designed 14-horsepower town car, which is destined to prove a large factor in the near future. It has a landaulet body seating five, and represents an interesting example of what can be done in the shape of a car built for this service, as nothing that could possibly conduce to its efficiency or the comfort of the passengers has been omitted. The remaining members of the line are a standard 40-horsepower touring car and a 24-horsepower car of the same type, both being seven-passenger cars of the side-chain driven type, as is also the case with the town car, the six-cylinder being the only shaft-driven car listed.

Atlas.—The Atlas Motor Car Company, Springfield, Mass., formerly the Knox Motor Truck Company, is the only concern exhibiting at the show which makes a specialty of turning out both pleasure and commercial vehicles of the two-cycle type. The former was confined to a two-cylinder runabout during the present year, but for the coming season there will be listed a three-cylinder, double folding-seat runabout holding two or four passengers, and in a four-cylinder model in the shape of a five-passenger touring car, the powers being 22, 36, and 46-horsepower respectively. The two new models make their debut at the show and their specifications are of interest. The cylinder dimensions are 4 1-2 by 4 1-2 inches, thermo-syphon cooling is used and high-tension ignition from batteries. The clutch is of the conical type, with a three-speed selective change-speed gear and shaft drive in each case, Hess-Bright ball bearings being used in the gear-set and Timken roller bearings in the wheels. The latter are 34 by 3 1-2 in the case of the smaller car and 34 by 4 inches on the larger. Three quarter elliptic springs are used on the former and semi-elliptic on the latter.

Austin.—As in former years, the Austin as revealed at the show will be distinguished by the high power of the various models staged. The Austin Automobile Company, Grand Rapids, Mich., will this year turn out a new six-cylinder roadster with combination body, permitting its use either as a runabout or as a touring car. They also show a four-cylinder 60-horsepower limousine with detachable top, and a 90-horsepower, six-cylinder touring car. These cars are distinguished by numerous exclusive features of design and construction that have been evolved by their builders, and, having proved unusually successful during the several years that this line has been on the market, have been per-

petuated from season to season in improved and modified form, so that they may well be said to now represent an Austin standard of construction which has been reached by successive stages of improvement as experience has dictated the necessity.

Brush Runabout.—While much has been said and written about this novel little car since the date of its introduction by the Brush Runabout Company, Detroit, Mich., this will be the first occasion of its public exhibition, and it is naturally expected to form a center of attraction, owing to the numerous features of design and construction which characterize it, and which are so different from current standards. Five models are listed, three of them for pleasure use and two for commercial service. Model 1A is a six-horsepower, single-cylinder runabout, with piano box body, seating two people, and Model 1B is the same chassis with a few extras. Model 2A is a two-cylinder touring car rated at 12 horsepower and seating four people, while Model 2B is a delivery wagon on the same chassis, and Model 1C is a package delivery on the single-cylinder chassis. High-tension ignition, with accumulators, cone clutch, planetary change-speed gear, and side-chain drive are characteristics common to all the models. The wheelbase of the single-cylinder chassis is 74 inches and the twin-cylinder 88 inches.

Cameron.—These cars, made by the Cameron Car Company, Brockton, Mass., are distinguished by the use of an air-cooled motor and a special form of rear-axle transmission. Three types are made, known as Models 6, 8, and 9, the first being a two-seated, non-convertible runabout; the second, a larger car of the runabout type with rumble seat, and the third a four-seated surrey on the same chassis as Model 8. The motor is a four-cylinder, air-cooled type, on which the use of two exhaust pipes is taken advantage of for cooling purposes, in addition to the specially cast radiating ribs. The valves are placed directly opposite one another in the side of the cylinder head, and are mechanically operated by rocker arms. The valves are in cages and are readily removable for inspection and repairs. Another notable feature about the Cameron car is the special ball-bearing rear-axle transmission, which is incased in the same housing as the bevel-gear drive and differential as a unit, and is extremely compact and simple.

Cartercar.—"No gears to strip—no clutch to slip," is the slogan of the Motorcar Company, Detroit, Mich., builders of the Cartercar, which is distinguished by the use of a friction type of change-speed gear and transmission combined, and to which this firm has devoted its energies for some time past. Both pleasure cars and commercial vehicles are built, the former in runabout, roadster, and touring types, and the latter principally in the shape of delivery wagons, the chassis being of the same design and construction throughout in both cases. The power plant consists of a twin-cylinder, horizontal-opposed type of motor, placed transversely across the forward part of the frame, and directly behind it, making its location about the center of the chassis, is placed the friction disk, directly attached to an extension of the motor crankshaft. Back of this is the countershaft, carrying the friction wheel and sprocket, from which the single-chain drive to the rear axle is taken.

Carter Two-engine Car.—As their title indicates, the chief feature of these cars is the employment of two motors, which are placed side by side in the same position as the single engine is usually located. They are made with either air or water-cooled motors of equal power, which are so arranged that either may be used separately or both together. This gives the car the rather anomalous rating of 24-60-horsepower. It will be the only eight-cylinder car staged at the show. A touring car type is listed, having either a five or seven-passenger body. The transmission is by cone clutch through a sliding gear of the selective type, with final drive by shaft. The wheelbase is 114 inches and the weight 3,500 pounds, all on. A smaller car with a five-passenger body is also listed. It has a 103-inch wheelbase and weighs 2,400 pounds. These cars are manufactured by the Carter Motor Car Corporation, Washington, D. C., and Detroit, Mich.

Chadwick.—The Chadwick Engineering Works, Philadelphia, Pa., is one of the few firms who will devote its entire attention to the production of a six-cylinder car during the season of 1908. It will probably be the largest car of its kind at the show, the six-cylinder motor measuring 5 by 6 inches and being rated at 75 horsepower, while it is geared in the ratio of 1.9 to 1, so that its 36-inch driving wheels will make one revolution for less than two turns of the motor crankshaft. Every feature of its design and construction reflects the result of long study and experience in automobile building, and it has many to attract the eye and hold the attention of the auto designer as well as the autoist. As its motor turns over at the rate of 1,100 r. p. m. when developing its normal rating, it will have a speed of a little better than a mile a minute. Doubtless the first thing to strike the eye is the dual unit, copper water jacket made to surround each pair of cylinders, which has long been a feature of the Chadwick cars, while another to hold the attention is the ingenious chaincase, though to tell the truth there are so many special features of interest about the car that it would be useless to attempt to enumerate them here.

Cleveland.—In keeping with the policy adopted by so many makers of high-grade cars, the manufacturers of the Cleveland, the Cleveland Motor Car Company, New York, will concentrate their efforts on one chassis for the season of 1908. Its power plant consists of a four-cylinder, vertical, 5 by 5-inch motor, with the cylinders cast in pairs. Ignition is of the high-tension type with a Bosch magneto, an auxiliary system using an independent coil and set of accumulators also being fitted. Lubrication is taken care of by a positive-feed mechanical oiler, self-contained in the motor, while a water-jacketed, 1 1-2-inch Schebler carbureter provides the fuel supply. A Mayo radiator of special shape and a gear-driven pump comprise the cooling system. The transmission consists of a multiple disk clutch and a four-speed selective type of gear-set, final drive being by shaft. In both the latter essentials F. & S. annular ball bearings are employed. The running gear consists of 36 by 4-inch front and 4 1-2-inch rear on the touring car, and 36 by 3 1-2 and 4 on the roadster, the wheelbases being 122 and 110 inches, respectively.

Colt Runabout.—The exhibit of the Colt Runabout Company, Yonkers, N. Y., is of interest in that this concern confines its attention solely to the production of a runabout type of car, whereas in the majority of instances the runabouts listed by other makers are merely bodies of that type mounted on standard touring car chassis, with a few modifications to suit the purpose of the two-seated roadster. The Colt is unusual in other respects as well. It forms one of the numerous contingent of six-cylinder advocates, but is of conservative size, its motor only being rated at 40 horsepower, which, however, is unusually high when it is considered that the complete car, with all on, only tips the scales at 1,800 pounds, making its proportion of power to weight one of the most noticeable at the show. A Bosch high-tension magneto supplies the ignition, while the remaining features of the motor are of exclusive design. The transmission consists of a conical type of clutch, together with a selective form of change-speed gear and shaft drive. The wheelbase is 105 inches and the body fitted is a special racing type.

Continental.—This is a new car from the college town of New Haven, Conn., and though it has gone through its baptism of fire in the chief events of the past season, this will be its first show. It is the work of C. S. Johnston, who lays no claim to originality or to the use of radically different ideas, but takes pride in the fact that it is patterned throughout after the most approved standards of automobile engineering construction. It is being turned out in a model factory established by the Continental Automobile Manufacturing Company, New Haven, Conn., and will be shown in several models. The Model C is a standard, four-cylinder touring car with a 120-inch wheelbase, while Model B is the same chassis with motor further back and equipped with a body of the semi-racing type having three seats. Model D is a four-cylinder, 50-horsepower car along the same standard lines

and with Model E, a 40-horsepower, six-cylinder car, completes the line. A magneto of the company's own special design and make will be fitted as an extra. All the motors are equipped with a special compression relief, making them very easy to start.

Crawford.—Every phase of the demand for high-grade cars at a medium price has been catered to by the Crawford Automobile Company, Hagerstown, Md., in making its plans for the season of 1908, and as a result its line will consist of five models, ranging from 35 to 50 horsepower. Model D is a three-passenger runabout rated at 35 horsepower and having a 112-inch wheelbase, while Model E is the same chassis fitted with a touring body, the wheelbase being 106 inches. Model C is a 40-horsepower touring car seating five, while Model F is a 50-horsepower machine which is listed in both touring and limousine types, and has a capacity of seven passengers in either form. The specifications of all these models are practically uniform where the chassis design and construction is concerned. All are equipped with magneto ignition, multiple disk clutch, selective type of change-speed gear and shaft drive, the wheelbases ranging from 106 inches, in the case of the 35-horsepower touring car, to 118 inches in the Model F 50-horsepower car, while the weights range from 2,300 to 3,400 pounds.

De Luxe.—As has been the case during the past season, the makers of the De Luxe, the De Luxe Motor Car Company, Detroit, Mich., will confine their attention to the production of a high-powered touring car in one model. The power plant of this car is of a special design, having oppositely disposed valves, mechanically operated through walking-beams actuated by a single camshaft. The motor dimensions are 5-inch bore by 5 1-4-inch stroke, and it is designed to produce its rated power output at a moderate normal speed. Dual ignition, comprising two entirely independent systems, using an Eisemann high-tension magneto on one side and a set of coils and accumulators on the other, has been made a feature. The carbureter is an exclusive design. A conical metal-to-metal clutch with cork inserts is fitted with four-speed selective change-speed gear and shaft drive, in combination with a solid one-piece I-beam rear axle. Chrome-nickel steel is employed for making all forgings, and annular ball bearings are used wherever available, no less than 33 ball bearings being employed on the car. The wheelbase is 121 inches and 36 by 4 and 5-inch tires, front and rear, are used.

Dorris.—The exhibit of the Dorris Motor Car Company, of St. Louis, Mo., is one that causes the technical expert as well as the autoist interested in fine design and construction to linger somewhat longer than is usually accorded the average exhibit, for the many novel features of the car's power plant and chassis cannot fail to attract favorable attention. The motor is of the overhead valve type, the valves being actuated by rocker arms and rods of special design, and the whole arrangement being unusually well worked out. The same compactness of design that characterizes the motor and that is at once evident in the lack of superfluous details or amount of metal, is also apparent in every feature of the chassis. A four-cylinder motor is employed, the power being transmitted through a clutch of the multiple disk type and of extremely compact and simple construction, a gear-set of the sliding type with selective operation and a shaft drive completing the remaining essentials of the transmission. The chassis is fitted with either a runabout or touring body, seating three or five.

Dragon.—High proportion of power to weight, which is achieved only by the use of high-grade materials and skilled design and construction, are characteristics of the Dragon car, of which the Dragon Automobile Company, Philadelphia, will list a touring car and a special roadster. This is evident from the fact that the 24-26-horsepower touring car with a 104-inch wheelbase tips the scales at only 1,950 pounds, while the 35-horsepower runabout with its 96-inch wheelbase weighs only 1,600 pounds. A wood body is fitted to the former and special metal body with a capacity of two persons is fitted to the latter. In other respects the chassis specifications of both cars are very similar through-

out. The motor accessories are of a standard high-grade type, and the power plant as a whole is extremely simple, compact, and accessible. The transmission consists of a conical, leather-faced type of clutch, in connection with a sliding pinion type of change-speed gear using progressive operation, final drive being by shaft.

Eagle.—This car is of interest in that its power plant reveals the further possibilities of the internal combustion motor that have yet to be developed. Its power plant consists of a three-cylinder compound gasoline motor, two of which are high pressure and the third low pressure, this last being placed between the other two. Each of the high-pressure cylinders exhausts into the intermediate or low-pressure, the dimensions of which are about twice those of the high-pressure cylinders, instead of being permitted to escape into a muffler or the air, as is the common practice. In this large cylinder the pressure of the exhaust gases, which in the average motor are allowed to escape while still holding considerable energy, is further expanded until a point but little above that of atmospheric pressure is reached, so that when the burnt charge is finally exhausted from the low-pressure cylinder it is no longer necessary to employ a muffler. It is manufactured by the Eagle Motor Car Company, Middletown, Conn.

Ellsworth.—This is an entirely new comer which will make its debut in chassis form at the Palace show. It has been designed throughout by Thomas J. Fay, who has incorporated in it many features of merit, learned as the result of experience in building and repairing the best-known cars of both American and foreign makes, during the past several years. It is being built by J. M. Ellsworth, 520-522 West Twenty-second street, New York City, and has been christened the "chrome-nickel-steel car," as that material enters almost entirely into its make-up. It might have been named ball-bearing with equal justice, as anti-friction bearings of this type have been employed wherever possible. But it is not so much these features as those of the design of the various parts and the fine points involved in their method of construction that will be of chief interest to the engineering fraternity, as this is something of which Mr. Fay has made a special study, carefully avoiding those errors of machine-shop practice common in the building of other machinery, and which have been found so dangerous when transplanted to automobile making.

Ford.—In accordance with the Ford policy of keeping a good thing dark until it is ready not alone to be announced to all the world, but to be marketed as called for, the Ford exhibit does not display any of the novelties that the makers of this popular car have up their sleeves for the coming year. Their showing is confined to chassis of the present year's models, with some improvements in body design that will be current on this make next season. The most prominent of these is a taxicab on the runabout chassis. But it is known at the present writing that all the Ford 1907 models will be continued, and an addition of three or four new members made to the family. Also that the plans of this house looking to production on a vast scale will be further carried into practice during the coming year, as materials are being contracted for and arrangements made to produce no less than 25,000 Fords of all types in 1908. Just what the characteristics of these promised new models will be is something that has been kept as dark as a Japanese plan of campaign, and it will continue to be kept under cover until the makers see fit to announce it publicly. This concerns chassis details alone and will not be forthcoming until later.

Frayer-Miller.—This car will be shown in three distinct types of chassis, all equipped with motors of the special air-cooled type that has been evolved and developed by the Oscar Lear Automobile Company, Springfield, O. The smallest will be of 24 horsepower and will be made in three types, the first being known as the Frayer-Miller "Philadelphia" car, although the signification of this title appears somewhat ambiguous. It is a two-passenger runabout. As a touring car it will have a seating capacity of five, and instead of the cone clutch used on the runabout, it is equipped with an internal-expanding type. Between

these two is a runabout combination car having a seating capacity of two, three, or four passengers, at will. All three models have a 100-inch wheelbase and shaft drive, but the first is fitted with a three-speed change-speed gear, while the other two are provided with four forward speeds. The other members of the line are the six-cylinder, 36-horsepower touring car and the 56-horsepower, four-cylinder touring car, this last-named machine being the only one to be fitted with magneto ignition.

Frontenac.—The builders of the Frontenac, the Abendroth & Root Manufacturing Company, Newburgh, N. Y., while numbered among those who will exhibit a center of attraction for the auto-buying public in the shape of a six-cylinder model, will devote the greater part of their attention to their four-cylinder model, which is the result of three years' study and experiment, having first made its appearance last year and but a limited number being built. The designer is finally satisfied that there is absolutely nothing left to be desired where either the design or construction of the car is concerned, and they will be turned out in numbers during the coming season. The motor is of the standard, four-cycle, four-cylinder type, measuring 4.3-4 inches bore by 5 inches stroke, and is rated at 40-45 horsepower. The clutch is of the multiple disk type, self-contained in the flywheel and consisting of alternate plates of malleable iron and bronze, the former of which are provided with cork inserts. A three-speed gear-set is fitted, operated on the selective plan, and final drive is by shaft. Tire equipment is 4-inch front and 4 1/2-inch rear, on 34-inch wheels, the wheelbase being 124 inches.

Gaeth.—The Gaeth Automobile Company, Cleveland, O., is one of the comparatively small number of firms that are showing both pleasure and commercial vehicles in their exhibit. The former consists of four-cylinder, 35-40-horsepower standard type of touring car, with a seven-passenger tulip type of body. This car is distinguished by several features of design and construction to be found only in scattering instances in American practice, such as the use of the low-tension make-and-break type of ignition, constricting band clutch, and the like. The change-speed gear is of the sliding-gear type, with progressive method of shifting. Final drive is by shaft, and the car's wheelbase is 112 inches. This car is officially known as Type XV., while the commercial vehicle is known as Type K. It is equipped with a single-cylinder, 12-15-horsepower motor, placed horizontally under the body, and represents a form of construction which has been developed by this firm for several years past. It is fitted with a planetary type of change-speed gear and double side-chain drive.

Garford.—Probably the most numerous line of cars to be staged at the show is that of the Garford Manufacturing Company, Elyria, O., whose product is marketed through the Garford Motor Car Company of New York, the latter's headquarters being at 1540-1542 Broadway, New York City. While these cars are new to the public under this name, their makers are doubtless the largest manufacturers of parts in the country, and as such have been supplying many firms who did assembling for several years past. The line comprises a 30-horsepower touring car and roadster, 40-horsepower ditto, a 30-horsepower limousine and landaulet, and a 40-horsepower limousine, known as Model A or B, according to the power of the motor. Both chassis are characterized by those features of design and construction with which the product of this concern has long been identified, chief among which are the low-tension type of ignition, cone clutch and shaft drive, a progressive type of change-speed gear being employed on the 30-horsepower car and selective type on the larger car.

Gearless.—It is safe to say that there will be few exhibits in the entire show that will be of such absorbing interest to the engineer and autoist alike as that of the Gearless Transmission Company, Rochester, N. Y. This firm is not alone placing on the market a six-cylinder, two-cycle motor—the first of its kind ever placed on an automobile—but as its name indicates, has devised a form of change-speed gear that is minus the chief distinguishing characteristic of this part of the car—that is, the gears or pinions. It is also marketing a four-cylinder, two-cycle car, and as such,

represents a notable addition to the list of manufacturers who are devoting their attention to this type of motor. The change-speed gear, which is naturally of greatest interest, is essentially of the planetary type of operation, but depends upon the friction of the engaging surfaces rather than teeth, to transmit the power. The six-cylinder motor is rated at 75 horsepower and the four-cylinder at 60 horsepower, both being shown in touring and runabout types, the latter being known as the Gearless Greyhound.

Glide.—Early in the present season the Bartholomew Company, Peoria, Ill., decided to cast its lot with the advocates of the six-cylinder type, and its efforts in this direction will be revealed for the first time at the show. The newcomer is known as Model H, and is a 60-horsepower car of seven-passenger capacity. Its weight is 4,000 pounds and it has a 132-inch wheelbase, its remaining features being similar to those which have long been adhered to by the builders of the Glide in the design and construction of their cars. The other members of the line are the Model G and the Glide 45, the first-named being a 40-horsepower, five-passenger car, and the second being a 50-horsepower machine of the same capacity, although this may be easily increased to seven in either case. The ignition on the Model G is by means of coils and accumulators, dual ignition, using a high-tension magneto for general service, being installed on the two larger models. A selective type of change-speed gear is employed on all three and all are shaft-driven, the two smaller cars having a 120-inch wheelbase.

Great Smith.—These cars claim Topeka, Kan., as their home and the Smith Automobile Company, of that city, as their makers, though the latter's product is now distributed entirely through the Smith Motor Car Company, also of Topeka, Kan. A touring car and roadster are listed, the chassis being equipped with a 4-1-2 by 5-inch, four-cylinder, water-cooled, vertical motor, nominally rated at 24 horsepower, though actually developing almost twice that, or 45 horsepower. The design throughout is original in many ways, though conforming closely to the highest standard practice, and a number of the accessories of the power plant are of exclusive manufacture, such as the Smith carbureter and the Smith vertical tubular radiator. The clutch is the Stafford patent, multiple disk, the gear-set being of the three-speed sliding type, operating with a single lever, which automatically disengages the clutch, shifts the gear and re-engages the clutch without recourse to the pedal. The wheelbase is 110 inches and 36 by 4-inch tires are used. Either as a touring car or roadster, the list price is \$2,650.

Grout.—For the coming season Grout Brothers Automobile Company, Orange, Mass., will devote their entire attention to the production of a 35-horsepower, four-cylinder chassis which will be listed both as a five-passenger touring car and as a three-seated roadster. The chassis specifications are, with few exceptions in the shape of detailed improvements here and there, practically the same as those of this year's car. The motor-cylinders are cast in pairs, high-tension ignition, using a standard four-unit coil and set of accumulators, automatic lubrication and carburetion, gear-driven circulating pump, and other features of motor design and construction have all been continued with little alteration. The clutch is of the conical type, while the gear-set is sliding with progressive changing, final drive being by double side-chains. The weight of the touring car is 2,600 pounds all on, and that of the roadster 2,350 pounds, both cars listing uniformly at \$2,500 with the usual equipment.

Hatfield Buggyabout.—"An automobile without an expense account" is the characterization given the Hatfield buggyabout by its makers, the Hatfield Motor Vehicle Company, Miamisburg, O., and a review of the simplicity of its specifications would seem to bear this out fully. To quote further, it is "gearless and clutchless." Its power plant consists of a two-cylinder, opposed, air-cooled motor, which is mounted well to the rear, thus concentrating the weight over the drivers. It is placed transversely with the flywheel facing forward, the latter being utilized as a member of the friction transmission, the remaining essentials of

this consisting of a substantial countershaft, on the central portion of which there is a movable friction wheel, arranged to be pressed into contact with the friction facing on the flywheel, while on its ends it carries sprockets for the double-chain drive to the rear wheels. These sprockets are of the differentially-acting reverse ratchet type; they are extremely simple and positively are exclusive on this car. Another special feature is a patented shock absorber, which is part of the regular equipment of the car.

Holsman.—As the predecessor of all the buggyabouts, the Holsman can look down upon the many that have since sprung into existence, as it has now been manufactured continuously over a period of seven years, and there are hundreds of this make of cars on the road. The makers—the Holsman Automobile Company, Chicago—show two types, namely, a runabout and a surrey, both of which, however, are built on the same chassis. The motor is of the twin-cylinder, horizontal, air-cooled type, placed beneath the body, and is somewhat anomalously rated as having an output of 12.4-5 horsepower, by the makers. Jump-spark ignition is employed, using dry cells, and both the lubrication and fuel supply are automatic. The clutch is of a special type devised by this house, as is also true of the transmission, which is by means of steel cables running from sprockets on a countershaft to the rear wheels, the tension on these cables being adjustable by means of a hand side lever, serving to move the countershaft backward and forward, the reverse also being obtained in this manner. The wheelbase in both models is 75 inches and the weight of the runabout is 940 pounds and that of the surrey 1,050 pounds. The running gear is of the high-wheeled type, using solid rubber tires.

Imperial.—Under this title a new car which hails from western Pennsylvania makes its debut at the present show. It is the product of the Imperial Motor Car Company, Williamsport, Pa., and though 1908 marks the second year of its career, the coming season will be the first in which it will be turned out in numbers. It has a 4-1-2 by 5-1-4-inch four-cylinder motor, conservatively rated at 35 horsepower, the design and construction of which closely follow the highest standard practice in every respect. The clutch is of the metal-to-metal, floating ring type, equipped with cork inserts, the second member of the transmission consisting of a sliding type of change-speed gear providing three forward speeds and operating on the selective plan. An I-beam, forged front axle is employed, with a full floating type rear. Dual ignition is employed, using an Eisemann high-tension magneto on the running side, while lubrication is of the circulating type, using a reservoir in the crankcase. The wheelbase is 108 inches and the tire equipment 36 by 3-1-2 all round.

Jackson.—As during past seasons, the Jackson line for 1908 will comprise a number of types, ranging from the low-powered, two-cylinder car which made such a name for itself in this year's contests, up to a 35-horsepower touring car. They are listed as Jackson Models C, D, and E, and the makers, the Jackson Automobile Company, Jackson, Mich., have made plans to greatly increase their output for the coming year. Model C is a 20-24-horsepower, two-cylinder car, with a seating capacity of five. It has a multiple disk clutch, planetary type of change-speed gear, and single-chain drive. The wheelbase is 96 inches and it tips the scales at 2,000 pounds. Model D is of the same power and the same type of motor, but is fitted with a sliding type of change-speed gear, using the selective method of operation, and has a final shaft-drive. Its wheelbase is 106 inches and it weighs 200 pounds more. Model E is a standard type of four-cylinder car rated at 35 horsepower, and is made either with a five-passenger touring body or a runabout body seating three or four. The wheelbase is 111 inches and the weight 2,450 and 2,400 pounds.

Kiblinger.—This is without doubt the lowest-priced car exhibited in the show, as the models listed by the W. H. Kiblinger Company, Auburn, Ind., range from \$250 to \$500. They are of the popular buggyabout type, and no less than six models are listed. The motor is of the horizontal, double-opposed type, and is conservatively rated at 8-10 horsepower. It runs quietly and has an abundance of power, giving the car a speed range of from

4 to 25 miles an hour, with good hill-climbing capacity, while some idea of its economy in operation may be gained from the fact that the makers claim it will cover 35 miles on a gallon of gasoline. The smaller types, such as Models A and B, are fitted with single-cylinder motors of 4 and 6 horsepower. Ignition is of the high-tension type, using accumulators as the source of current. A disk clutch and planetary form of change-speed gear are employed, with final drive by side chains. The wheelbase is 65 inches, and the weights range from 600 pounds upward, according to the model.

Kisselkar.—This is a car from the West which makes its first appearance in the East at this show. It is made in Hartford, Wis., by the Kissel Motor Car Company, and was only brought out during the past season. Three models are listed, all of them being placed on a 35-40-horsepower, four-cylinder chassis. The mainstay of the line, of course, is the touring car, which is fitted with five to seven-passenger body. Ignition is of the high-tension type, using both accumulators and dry cells, while the motor accessories throughout are of the types favored by standard practice, and are of high-grade construction, although the cars are built to list at a low price, considering their size and equipment. A conical type of clutch is fitted in connection with a sliding type of change-speed gear, operating on the selective plan, final drive being by shaft and bevel gear to a rear live axle. The roadster is fitted with a specially designed three-seated body, and its specifications are much the same as those of the touring car, which is also true of the limousine. The wheelbase in each case is 107 inches, and the weights range from 2,100 to 2,800 pounds. Both roadster and touring car list at \$2,000, and the latter at \$2,200 with full equipment, including top and glass front.

Klink.—Dansville, N. Y., is the home of the new Klink car, and it is the boast of its makers that there is no more strenuous testing ground to be found anywhere in this country than is afforded by the hilly country of up-State New York that is to be found around Dansville, and on which all the Klink cars undergo their final try-out. The motor is of the standard four-cylinder, vertical type rated at 30 horsepower, and the touring car is fitted with a five-passenger body of the King of the Belgians type. Ignition is of the high-tension type, using the standard form of unit dash coils with accumulators as the source of current supply. A conical type of clutch is fitted, together with a selective form of sliding gear, providing three forward speeds and reverse, final drive being by bevel gear and shaft. The wheelbase is 110 inches and the weight of the touring car 2,100 pounds. The runabout has a seating capacity of four passengers, as the rumble accommodates two. Other details are the same, including the wheelbase, while the weight is 1,900 pounds.

Lambert.—As exponents of the friction type of power transmission, the makers of the Lambert cars, the Buckeye Manufacturing Company, Anderson, Ind., have developed this system with unusual success, and their consistent adherence to it ever since they entered the automobile industry, is ample evidence of their faith in its superiority as well as what they have been able to accomplish with it, as both their heavy commercial vehicles as well as their pleasure cars are fitted in this manner. Four types of pleasure cars are listed for the coming season and all will be seen at the show. They are, in the order of their importance, the Lambert "18," a two-cylinder, 18-horsepower car of the single-chain driven type, seating three people; the Lambert S, also a two-cylinder car of 24 horsepower, with double-chain drive, seating five people, and the Lambert Models R and M, both of which are 35-40 horsepower, seven and five-passenger touring cars of the standard type. Model R is side-chain driven and Model M has a shaft drive, the wheelbases being 106 and 105 inches, respectively.

Logan.—Interest in the Logan line will be divided between pleasure and commercial vehicles, as the Logan Construction Company, Chillicothe, O., has long devoted a considerable part of its attention to the latter, with no little success. The Logan Blue-Streak semi-racer met with an unusually favorable reception during the past year, and on more than one occasion was given an

opportunity to show what it could do in the way of speed and endurance over the worse than indifferent roads of the Middle West. In fact, so successful has this model proved itself that the makers have added a somewhat similar car of 20-24 horsepower, designed especially for the use of professional men, physicians, and the like. Its power plant consists of a four-cylinder, air-cooled motor, sliding gear transmission and shaft drive, while its features in the main are those of the Blue-Streak. All on, it tips the scales at only 1,587 pounds and is intended to be an easy car on tires. One of the chief models of the Logan truck line for 1908 will be a three-ton vehicle designed in accordance with the standards evolved by this firm in its several years' experience in the commercial line.

Marion.—In the Marion, made by the Marion Motor Car Company, Indianapolis, Ind., is to be found another of the numerous advocates of the six-cylinder type. Its representative in this field will be known as the Marion "Six-Thirty," which is expressive of its type of engine as well as its power. It is shown with a two-seated roadster body and has dual ignition, using a high-tension magneto on the running side with accumulators and coils in reserve. The clutch is of the multiple disk type and the change-speed gear sliding, final drive being by bevel gear and shaft to a live rear axle. The wheelbase is 102 inches and the weight, all on, 1,900 pounds. The other car, known as Marion Model 8, is fitted with a roadster body, but is capable of carrying two, three, or four passengers. It is equipped with a standard, vertical, four-cylinder, water-cooled motor, conservatively rated at 24-horsepower, and, with the exception of not being fitted with a magneto, its specifications are very similar to those of the six-cylinder roadster, the wheelbase being the same, with the weight 50 pounds less.

Marmon.—The features characteristic and prominent heretofore in Marmon construction, viz.: the 90-degree air-cooled motor, Marmon system of automatic force-feed lubrication through the hollow crankshaft, and the double three-point suspension in which the power-plant is on one frame and the body on another, each having three-point suspension, have all been retained in the line put out by the Nurdyke & Marmon Company, Indianapolis, Ind., for the season of 1908. There are two touring cars known as Models G and H, the former being a five-passenger car of 104-inch wheelbase and 34 by 4-1-2-inch tires on quick detachable rims, some of its other features being a multiple-disk clutch, selective type of sliding-gear transmission, shaft drive and roller-bearing steering column. Model H is also a five-passenger car, but has sufficient room in the tonneau for two extra seats. Its wheelbase is 114 inches and it has the same tire equipment. A radical change has been made in the motor by casting the heads separately, this construction having many advantages. This firm will also list a water-cooled car.

Maxwell.—Quite in keeping with the ambitious plans the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., has been making during the past season for its 1908 product, it now uncovers at the show one of the biggest things to be found there in the shape of a four-cylinder car of standard design and construction. This is a new 26-horsepower four-cylinder model, built along the same lines as the car that distinguished itself so ably in the A. A. A. tour last summer. It is listed at \$1,750 and has the same type of unit power-plant and transmission that have always been identified with the Maxwell design. The gear-set is of the sliding type, providing three forward speeds, and operates on the progressive style, an efficient interlocking device preventing any damage to the gears. Final drive is by propeller shaft, the Maxwell type of rear-axle driving unit being employed with its tubular steel housing. The other members of the line are the Model LC, 1-14-horsepower runabout, the 16-20-horsepower five-passenger touring car with double-opposed motor, and the Model M, 40-horsepower four-cylinder touring car, which is the highest-powered Maxwell representative.

Mitchell.—There will be no less than five Mitchells for 1908, including the Mitchell truck, which has proved so success-

ful during the past two years. In short, the Mitchell Motor Car Company, Racine, Wis., will market a 20-horsepower four-cylinder tourabout, known as Model G, with a three-seated body; a 20-horsepower two-seated runabout, known as Model H, and a 35-horsepower four-cylinder touring car with a five-seated body, known as Model I. This last car will also be made as a limousine. The wheelbase of the two smaller cars is 92 inches and that of the larger ones 112 inches, while the weights are 1,650, 2,500, and 3,000 pounds, respectively. The chassis specifications of all four are similar, high-tension ignition being used, cone clutch, sliding gear with progressive operation, and shaft drive, while the details of the commercial car are the same as those of the 20-horsepower chassis, the body being of either the open or enclosed type and fitted to order. The pleasure cars are equipped with a bevel gear drive, while the commercial car is fitted with a special form of worm-drive evolved by this firm.

Moline.—As has been its policy in the past, the Moline Automobile Company, East Moline, Ill., will continue to cater to a wide range of auto buyers by showing three different models. The smallest of these is the two-cylinder 18-horsepower Model H, Moline, which has proved so successful that scarcely any change has been found necessary to make it fulfill the rôle for which its manufacturers designed it—that of supplying the needs of the autoist who wishes a light, medium-powered car of low first cost and reasonable upkeep expense. The other Moline cars are the Model A and Model S. The former is equipped with a 4 1-2 by 5-inch bore and stroke, four-cylinder motor rated at 35-horsepower, while the latter—the smaller of the two—has a 3 7-8 by 4 1-2-inch motor conservatively rated at 24 horsepower. This car has a 100-inch wheelbase and is equipped with 32 by 3 1-2-inch tires, while the larger car has a 110-inch wheelbase and its rolling gear is shod with 34 by 4-inch tires all round. A three-speed sliding gear is employed on both, together with shaft drive.

Moon.—A new addition to the Moon line this year consists of a seven-passenger car having a 121-inch wheelbase, and equipped with 36 by 3 1-2 and 36 by 4 1-2 tires front and rear, the quick detachable type being specified on this as well as on the other model, which is a five-passenger car having 110-inch wheelbase and listed either with touring or roadster body. The motor is of the same design as that used in 1907, having the valves in the head, the chief difference in the power-plant consisting of the adoption of the Eisemann high-tension magneto. Both chassis will be equipped with selective type of sliding change speed gear, giving four speeds and reverse, the smaller cars being fitted with 34 by 3 1-2-inch tires front and 34 by 4 1-2-inch rear. The same multiple disk clutch and the same honeycomb type of cooler which proved so efficient on the present year's model have both been retained without change. All the timing gears on the motor as well as the pinions driving the magneto and circulating pump have been enclosed in an oil-tight and dust-proof housing.

Mora.—As the shining light of the Mora line, made by the Mora Motor Car Company, Newark, N. Y., there is a brand-new six-cylinder model which is unveiled for the benefit of the show visitors, as its specifications had not been made public heretofore. The cylinders are of the same size and type as the fours, but the crankshaft is mounted on annular ball bearings, this also being true of the camshaft. The selective type of change speed gear is also similarly equipped, while the front axle is of the I-beam type and the rear axle of the full floating type. The four-cylinder cars are of the same general type and construction as during the present season, with the addition of a number of detailed improvements. The motor is still built with marine type bearings, but malleable iron boxes and nickel habbitt bearings have been substituted for the former bronze boxes. The timer is now placed vertically and located forward instead of at the side, while the carbureter has been shifted over to the left-hand side. The lines of the body of the Mora-Tourer have been slightly changed, but the general dimensions are the same.

Napier.—Although the English-built Napier is now confined to a six-cylinder model, its American counterpart is exhibited in a four and a six. The former is a small car of 20-horsepower and is fitted as a runabout, with a seating capacity of two, and is a type of car that the Napier Motor Car Company of America, Boston, Mass., has always devoted its attention to. It has cone type of clutch, with selective change speed gear and shaft drive, a 90-inch wheelbase, and weighs 1,800 pounds. The six-cylinder car is rated as 60-75-horsepower and is fitted with a seven-passenger touring body. It has high-tension magneto ignition and in other respects it is similar in design and construction, not only to the smaller car but to the well-defined characteristics of Napier construction that have long been distinguishing features of this make of car. The six-cylinder model has a 126-inch wheelbase and weighs 3,400 pounds. The finish is also that made familiar by these cars in the past.

National.—Having already served in its initiation in the building of six-cylinder models, the National Motor Vehicle Company, Indianapolis, Ind., will go in stronger for this type in 1908 than previously, and accordingly shows six-cylinder cars in two sizes. The smaller car of this type is known as Model R and is equipped with 4 1-2 by 4 3-4-inch engine with twin-cast cylinders which is a model of compactness, as it has been the designer's object to keep the wheelbase down as much as possible to make the car handle easier, this dimension being 116 inches. Four large Hess-Bright bearings are used on the crankshafts, with similar bearings on the camshafts, extra large nickel-steel valves being employed to reduce the lift to a minimum, so that the motor as a whole has been made as quiet-running as possible. The large six-cylinder car has a 5 by 5-inch engine, and a four-cylinder type is also put out with the same size engine, while a smaller four has a 4 1-2 by 4 3-4 motor, making four distinctive models in all which will be listed by the National factory for 1908. Probably the most striking change where the casual observer is concerned will be the option offered by the makers of either a rectangular radiator, or the circular type that has been a distinguishing characteristic of the National cars ever since the latter have been on the market.

Overland.—This is a new car which is shown in the East for the first time at the Palace Show, and is made by the Overland Automobile Company, Indianapolis, Ind. The firm will devote its attention chiefly to the production of runabouts which will be fitted with an 18-22-horsepower four-cylinder motor, an expanding ring clutch, planetary type of change speed gear and a bevel gear and shaft drive to the live rear axle. The wheelbase is 96 inches and the weight, all on, 1,590 pounds, giving the car an excellent proportion of power to weight. High-tension ignition is employed, and the remaining motor accessories are of the best standard type favored by up-to-date practice. A two-passenger special runabout type of body is fitted. The car lists at \$1,250 in complete running order and with the usual equipment of lamps, horn, tools, etc.

Pennsylvania.—The Pennsylvania "50," officially known as the Pennsylvania Type C, will be the 1908 model of this firm of builders, the Pennsylvania Motor Car Company, Bryn Mawr, Pa. It is a car of numerous distinctive features, the motor being of the overhead valve type, but with the valves oppositely disposed and independently operated by two separate camshafts. The valves with their housings, springs, and other small parts are made in the shape of an easily removable unit and their withdrawal from the cylinder head exposes practically the entire interior of the combustion, thus permitting access to the latter for cleaning without going through the tedious process of dismantling the entire motor. The crankshaft is also worthy of note. It is a hollow drop-forging supported on liberal-sized die-cast bearings and it is employed to facilitate lubrication, which is taken care of by a Kinwood pressure feed oiler. The clutch is of the conical type of improved design, while the gear-set is located on the rear axle, this essential and the bevel drive and differential all being incorporated in a unit.

Pullman.—The makers of the York Pullman cars, more commonly known by the latter half of their designation, are numbered among those who believe in catering to as wide a range of buyers and taste as possible, and, in consequence, their line for 1908 will comprise no less than four models. As a matter of fact, the York Motor Car Company, York, Pa., is planning to market no less than five models during 1908, of which three will be distinctive types. These will be the Models I and J touring cars, a low-powered touring car, the details of which are not yet ready to make public, and the models 4-40 and 6-30 runabouts, the last-named being a six-cylinder car. The standard followed throughout is embodied in the construction of the Model I, five-passenger, 40-horsepower touring car, with its motor having independently cast cylinders, special type of water-jacketing and cylinder coupling and simplified water-circulation piping. The valves are oppositely disposed and mechanically operated, while the crankshaft is offset from the cylinder centers. Ignition is through a single coil, and combined timer and distributor and lubrication are taken care of by a six-feed oiler.

Premier.—Another addition to the list of converts to the six-cylinder idea is the Premier Manufacturing Company, Indianapolis, Ind., and, in consequence, their line for 1908 numbers a car of this type. This company's experiments with six-cylinder motors dates back to two years ago, their first trials being made with a 4 1-4 by 4 1-2-inch motor, cylinders paired, and with a triple Y manifold for the intake. The results obtained were very satisfactory, and the design as modified by experience and study in the interim is now making its debut at the show. The chief departure from the standards formerly adhered to by this firm, is the adoption of the Bosch low-tension magneto, a second system of the high-tension type using a single coil with distributor and accumulators as current supply also being installed. The low-tension igniters are driven from the intake camshaft by spiral gears and are advanced by moving the camshaft longitudinally. A departure is also to be noted in the use of a pressed steel oil pan under the crankcase in place of aluminum, as well as in the use of compression grease cups on the spring shackles, beside which the car has numerous other features of merit.

Rainier.—Except for the increase in the power which has been made to comply with the current demand, the single model which will be turned out by the Rainier Motor Car Company, at its new factory in Saginaw, Mich., will be practically identical with its predecessors, and the cars of this model will be marketed under the company's established policy of guaranteeing them free of repairs for a year. The car will be known as Model D and will be a 45-50 horsepower machine weighing 2800 pounds. Simplicity and accessibility throughout have been the aims of designer James G. Heaslett, who has been responsible for the Rainier for the past three years and who is now chief engineer at the new plant. The magneto can be removed and replaced in a few moments without disturbing the ignition timing, the clutch can be removed by taking out six cap screws and removing the pin from the universal, and the same is true of practically every part of the car. Drop forgings are used exclusively and all nickel-steel parts are specially heat-treated.

Reliable Dayton.—This is one of the popular type of buggyabouts for which the Middle West is becoming justly famous and which are exhibited for the first time in the East in any numbers. These cars are made by the Reliable Dayton Motor Car Company, 15-21 N. May street, Chicago, and are shown in two types, known as Models E and F, the former being a buggy and the latter a surrey. The power-plant consists of a horizontal, double-opposed type of motor, water-cooled, and with the jackets cast integral. The engine is placed under a sloping bonnet forward, with the radiator dropped from the forward cross-piece of the frame, a gear-driven pump being employed for circulation. The change-speed gear is of the sliding type, providing two speeds forward and reverse, final drive being by side chain of the Diamond roller pattern with Timken roller-bearing axles. The wheels are 40 inches front and 44 inches rear, shod with

11-4-inch Firestone side-wire solid tires. The wheelbase is 84 inches and the steering by T-bar side lever, the steering column also carrying the control and gear-shifting lever.

Reo.—Model C, 18-20 horsepower roadster, forms the star attraction of the Reo line for 1908, and on it the makers, the Reo Motor Car Company, Lansing, Mich., have spared no pains to make it represent the last word in the design and construction of a two-cylinder car to sell at a popular price. It is on practically the same chassis as the touring car of the same power which has been the leader of the Reo line since the latter has been on the market, and is fitted with an attractive type of runabout body with third seat on the tool box in the rear. In spite of this, it is listed at \$1,000 and is one of the biggest things in the show. Numerous improvements have been made on the other models, the wheels of the Model A, five-passenger touring car having been increased from 30 to 32 inches, 3 1-2-inch Michelin tires on Goodyear detachable rims being specified as the regular equipment. The braking system also has been improved by the addition of an emergency rear wheel brake with an improved braking lever, fitted in an outside quadrant ratchet with hand release.

Schacht.—Under the title of the "Auto Runabout," the Schacht Manufacturing Company, Cincinnati, O., brought out a light car patterned somewhat along the lines of the now familiar buggyabout, though of somewhat more ambitious pretensions, and showed it for the first time at the last Chicago show. For 1908 the line has been expanded and no less than three models are staged at the Palace show. These are the Model H, listing at \$640; Model K, listing at \$680, and the Model P, listing at \$800. The specifications of the chassis are the same in each instance, a 12-horsepower two-cylinder horizontal-opposed motor comprising the power-plant, while the transmission is of the friction type. Ignition is of the high-tension order, using dry cells as the source of current, while the motor accessories, such as the carbureter, lubricating system and the like, are all of standard pattern and high-grade make. The wheelbase is 65 inches and the weight 900 pounds in each case.

Speedwell.—This is another new advocate of the six-cylinder type which is the product of the Speedwell Motor Car Company, Dayton, O., a concern that entered the ranks of the industry last spring and has since built a limited number of cars which have been thoroughly tested out in the interim. The six-cylinder car is a 60-horsepower machine with a 132-inch wheelbase. Its power-plant consists of a standard six-cylinder Rutenber motor, transmission being through a cone clutch to a selective gear-set and shaft drive to a floating rear axle, two sets of rear-hub internal expanding and external constricting brakes being fitted. The use of full-elliptic springs seated on saddles rotatably carried on the axle casting and supporting the frame side pieces through large metal pieces riveted to the frame at the rear permits of hanging the body very low, which gives the car a very speedy look.

Stoddard-Dayton.—In preparation for the demand for its cars during the coming season, the Dayton Motor Car Company, Dayton, O., has made plans to turn out 2,000 cars, divided principally among the Model 8-H, 18-horsepower runabout; Model 8-K, 30-35-horsepower roadster, and the Model 8-F, 30-35-horsepower touring car. The Model 8-H will be very much along the same lines as the 7-H, with four inches longer wheelbase, bringing this up to 92 inches. The front axle will be an I-beam forging instead of the tubular form hitherto employed, and the body has been improved by placing the seats further back and lowering them. Model K will also have eight inches additional wheelbase, making it 113 inches, and it will be equipped with a new valve-in-the-head type of motor. Model 8-F has the same wheelbase and same motor, the latter being made entirely at the company's plant. The lubrication has been improved, a continuous circulating system now being employed. When specified, the new touring car is equipped with dual ignition, using a Bosch magneto and accumulators. A six-cylinder model is shown.

Wayne.—During the season of 1908, the Wayne Automobile Company, Detroit, Mich., will devote its entire energies to the production of a single model to be known as the "Wayne 30," although this will naturally be presented in runabouts as well as touring types of body. Its specifications are 4 1-2 by 5 1-4 inch, four-cylinder four-cycle vertical motor, nominally rated at 30-horsepower, but having an output largely in excess of this; clutch of the internal expanding type with sliding change-speed gear providing three forward speeds and using the selective method of operation, final drive by shaft. Ignition is of the high-tension type, using unit coils mounted on the dash and accumulators as a source of current. Two sets of brakes, one of the internal expanding and the other of the external contracting type, are fitted. The wheelbase is 107 inches, while the tire dimensions are 34 by 3 1-2 inches front and 34 by 4 inches rear. A five-passenger metal touring body of the popular straight-line type is fitted, the weight all on being 2,400 pounds. The specifications are the same in the case of the runabout with the exception of the weight, which is 2,100 pounds.

Welch.—Past years' experience has failed to change to any appreciable extent the Welch ideals of construction and equipment, and the Welch cars for 1908 will not only be practically the same, but no attempt whatever has been made to alter their appearance, the bodies having the same general lines, although they have been enlarged somewhat and made more commodious and luxurious. There has been also considerable improvement in the general finish of the cars. Where the power-plant is concerned, the motor is still characterized by the use of hemispherical polished combustion chambers in the cylinders, integral camshaft and cams, multiple disk clutch running in oil, independent clutch type of change-speed gear and honeycomb radiator, all of which have been features of the Welch cars for the past four years. Each detail of design, material, and workmanship has, however, been brought to a close state of perfection in that time, so that the efficiency of the car has been steadily improved. Two entirely independent systems of ignition are employed as a regular part of the equipment, consisting of a Bosch high-tension magneto on one side and a set of accumulators and coils on the other, the latter acting as an emergency reserve.

STEAM CARS SHOWN IN FOUR MODELS.

Lane Steamer.—For the season of 1908, the makers of the Lane steamers, the Lane Motor Vehicle Company, Poughkeepsie, N. Y., will list no less than four models, two of them being touring cars and two of the roadsters type. The leader of the line is known as Model 8-7, and is a 30-horsepower, seven-passenger touring car. Its power plant consists of a two-cylinder compound steam engine working at high pressure, and a special generator, fitted with the Lane burner. Final drive is by single chain. It is equipped with a straight-line body, has a 119-inch wheelbase, and weighs 3,500 pounds. The next smaller model is a five-passenger touring car and is known as Lane Model 8-5. Its power plant is rated at 20 horsepower and its specifications throughout are the same, with the exception of its shorter wheelbase and lighter weight, these being 97 inches and 2,300 pounds, respectively. These two chassis are also fitted as runabouts and are known as Models 8-3 and 8-2, the former being the 30-horsepower car and the latter the 20-horsepower. The weights are 2,000 and 1,600 pounds, respectively.

MOTORCYCLES: THE FLEET TWO-WHEELERS.

Aurora Automatic Machine Co., Aurora, Ill.,	1st Gallery 192
Ovington Machine Co., 2208 Broadway, New York,	1st Gallery 215
Reading Standard Co., Reading, Pa.,	1st Gallery 213

Aurora Automatic Machine Company.—Motorcycles and motorcycle parts are manufactured by this firm, a number of them being devices on which patents are held. These parts are usually sold to makers who assemble them in their own factories and market the complete machine under their own trade name.

Ovington Machine Company.—This firm is the American representative of the well-known F.-N. four-cylinder motorcycle, which is a machine of Belgian manufacture and the only one of its kind on the market.

Reading Standard Company.—"R. S." motorcycles and bicycles are made by this firm, which was the first in this country to bring out a motorcycle with mechanically actuated valves. It has numerous other features of merit to attract the attention of the lower of the fleet two-wheel steed.

MANUFACTURERS EXHIBITING COMMERCIAL VEHICLES ONLY

Manhattan.—This is a line of cars built entirely for passenger and freight-carrying capacity—in other words, commercial vehicles, to which the Mack Brothers Motor Car Company, Allentown, Pa., has devoted its entire attention for several years past. The concern is probably better known for its gasoline driven sightseeing cars, which have become a familiar sight in most of the large cities of the country during the past few years. They range from a 12-passenger tonneau type up to the 30-passenger cross-seat type, and are finished in various styles. The bodies are also of various patterns, such as inclosed hotel 'buses, combination passenger and baggage wagons, and the like, in addition to which a most complete line of freight-carrying types are listed, such as stake trucks, heavy delivery wagons, platform trucks, and brewery wagons, ranging in capacity from one to ten tons, all being built on a standard type of chassis equipped with a four-cylinder vertical motor and having side-chain drive. Any type of body is supplied to order to meet the requirements of the buyer.

Rapid.—The makers of these cars, the Rapid Motor Vehicle Company, Detroit, Mich., have one of the most complete exhibits of commercial vehicles ever staged at an automobile show. Ten entirely different models are shown, including covered delivery wagons, sight-seeing cars, trucks, opera 'buses, wagonettes, police patrol wagons and telephone emergency wagons. This only comprises part of the list which would be far too great to exhibit complete, so that the company will exhibit a collection of photographs showing the numerous other types of special bodies

that they have built and which are now in actual service. The 1908 Rapid chassis is as close an approach to "fool-proof" design and construction as its designers have been able to evolve after several years' experience in building this class of vehicles. The power-plant consists of a 30-horsepower horizontal-opposed motor of the four-cycle, water-cooled type, and every part of it as well as the remainder of the mechanism is placed in the most accessible position. Every part of the car, with the exception of such accessories as tires, carbureters and the like, is made in the home factory directly from the raw materials.

Reliance.—The makers of these cars, the Reliance Motor Car Company, Detroit, Mich., devote their attention exclusively to the manufacture of trucks, and are exhibiting three different models, and up to the present have made but one standard chassis having a capacity of two tons, with a safe overload capacity of three tons, but during the past year have been experimenting with two heavier models, rated at three and four tons and having a safe overload capacity of 25 per cent. For the past three years the two-ton model has been built in lots of fifty trucks at a time, carrying in stock 10 to 12 different styles of bodies and building the latter to order where necessary to suit the specifications of the purchaser. These trucks are of particular interest in that their power-plant consists of a motor of the two-cycle type and their success is evident from the statement of the makers, that 50 per cent. of the purchasers have ordered duplicate cars, a fact that speaks for itself better than any other form of commendation.

TIRES WHICH ASSIST IN AUTOING'S ENJOYMENT

Ajax-Grieb Rubber Co., 420 East 106th St., New York, 1st Gallery 202
 Continental Caoutchouc Co., 43 Warren St., New York, 1st Gallery 211
 Commonwealth Rubber Co., Reading, Mass., 2nd Gallery
 Diamond Rubber Co., Akron, O., 1st Gallery 104
 Empire Auto Tire Co., Trenton, N. J., 1st Gallery 121
 Firestone Tire & Rubber Co., Akron, O., 1st Gallery 166
 Fisk Rubber Co., Chicopee Falls, Mass., 1st Gallery 110
 G & J Tire Co., Indianapolis, Ind., 1st Gallery 108
 Goodrich Co., B. F., Akron, Ohio, 1st Gallery 112
 Goodyear Tire & Rubber Co., Akron, O., 1st Gallery 119

Hartford Rubber Works Co., Hartford, Conn., 1st Gallery 101
 Leather Tire Goods Co., Newton Upper Falls, Mass., 1st Gallery 130
 Michelin Tire Co., Milltown, N. J., 1st Gallery 129
 Motz Clincher Tire & Rubber Co., New York, 2nd Gallery 303
 Morgan & Wright, Detroit, Mich., 1st Gallery 158
 Pennsylvania Rubber Co., Jeannette, Pa., 1st Gallery 180
 Pneu L'Electric Co., 1610 Broadway, New York, 1st Gallery 217
 Republic Rubber Co., Youngstown, O., 1st Gallery 124
 Swinehart Clincher Tire & Rubber Co., Akron, O., 1st Gallery 188
 Trenton Rubber Goods Mfg. Co., Trenton, N. J., 1st Gallery 134



OR five or six years automobile manufacturers have been making use of the deficiencies of the pneumatic tire to hide the shortcomings and weaknesses of their own product. In happy moments, when the car is locked in its garage and its owner has his feet spread out before a comforting fire, the much abused tire would be accorded the credit to which it is entitled as an aid and a helpmate in the development of the automobile. But in the first race, competition, or tour in which the great expectations of the manufacturer were disappointed by defective castings, inferior steel, inefficient cooling arrangements, or poor ignition, the abused tire was made to bear the sin of it all.

This year the tire has truly come into its own. In at least three of Europe's fastest and most keenly contested races the winners have declared unreservedly that they have not been in any way delayed by tire trouble. In the French Grand Prix an average speed of seventy miles an hour was maintained for over four consecutive hours without any weakness developing in the tires with which the leaders were equipped. Compared with the state of affairs at races but two years previously, the result was stupendous. America has had few opportunities of demonstrating by intensified tests of a few hours to what extent her own product has been improved over that of previous years. Deprived of a long-distance road race, the only speed tests have been on circular tracks, where though less conspicuous than in international road races, the improvement has been no less marked.

For those who have had the time and opportunity of watching cars in the more important national touring competitions, the change during the past season is no less conspicuous. Instead of being able now to take shelter behind the rubber with which his wheels are shod, the automobile manufacturer who puts up the plea of tire trouble lays himself open to the charge of cheese paring. Those most closely connected with the industry know that with tires of proper size for the load they have to bear, attention to inflation, and reasonable care, the old familiar cry on the part of the manufacturer is a self-accusation.

Finality has not been reached, but the progress which has been made is more than sufficient to remove the stigma which has somewhat unjustly been attached to the pneumatic tire since its application to automobiles. Apart from the progress which every firm naturally strives to make in material and methods of construction, new developments appear to be in the direction of quick and reliable methods of changing, non-skid devices, and, later—for the problem is a big one—the development of the most economical type of solid tire for commercial vehicles.

Ajax.—Wrapped tread automobile tires are the feature of the Ajax-Grieb Rubber Company. The 1908 lines which are shown differ materially from previously made molded tires, inasmuch as

they bear a cushion of pure Para rubber between the carcass and the tread, varying in thickness from 1-8 to 3-16 inch, according to the size of the tire, and also has two breaker strips between the cushion and the tread, which are declared to absolutely prevent the separation of the tread from the carcass. In curing the tire the carcass is first vulcanized, and the tread, which also varies in thickness according to the size of the tire, is then put on raw and hand-wrapped, after which the whole tire is cured by the open steam process, which toughens the facing and adds miles of wear to the tire. A guarantee of five thousand miles is now given with all Ajax tires, and has proved a great success, not only in the marketing of the tires, but in the guarantee being lived up to.

Continental.—Imported from the old-established factory at Hanover, Germany, the Continental Caoutchouc Company, New York, is exhibiting a full range of its wares. The output includes Model A, or standard type with round tread, and Model C, or flat tread tire, specially manufactured for road racing. The tread of this tire is corrugated on its surface and is so designed that about two inches of it is in constant contact with the road surface. It has been used very successfully on powerful racers, and is especially recommended for long-distance road traveling. All Continentals are made in both American and metric sizes.

Commonwealth.—The Mitchell punctureless pneumatic tire manufactured by the Commonwealth Rubber Company forms the center of attraction at this stand. The tire is absolutely punctureproof, it is claimed, and cannot be wrenched off or blown out from heat, and is as resilient as any ordinary pneumatic tire.

Diamond, prominent among Akron's representatives in the tire section of the show, puts forth the statement with particular emphasis that its line of conduct for 1908 will be competition in the field of quality only. There will be no cutting in prices, no deviation from figures in the net lists, and no preferential treatment for anyone. The Diamond wrapped tread method of manufacture, which has gained for Diamond its present reputation, will be closely adhered to. Quick detachable tires and the Marsh quick-acting clincher rims are the prominent features of the Diamond Rubber Company's exhibit. The tires are shown in the flat tread, regular tread, Bailey tread, and Diamond non-skid tread types. In addition are exhibited the Diamond tire for Fisk rims, also the mechanical Diamond or Dunlop type of tire. A new feature for which great claims are made is the Diamond electric, specially constructed for light electric cars. A dismountable rim which was used to a limited extent in the Vanderbilt race of a year ago, and in later contests with good results, is shown at the Diamond booth. The American rights of this rim are controlled exclusively by the Diamond Company. Two new constructions in solid tires are shown in the wire mesh base and side wire types, both of almost pure white rubber, extremely tough and resilient. This rubber is also used in tires for the buggyabout type of car.

Empire.—Red and gray tubes, automobile cases, and a complete line of tire accessories comprise the show of the Empire Automobile Tire Company. The raised oval tread is constructed, the outer surface being made of very tough wear-resisting rubber

that adheres firmly to the fabric and relieves this latter of much of the shock from severe roads. Of the two types of inner tubes, red ones are specially recommended because of their increased thickness and their special process of construction, which prevents deterioration.

Firestone.—Two new things which have never before been exhibited at any automobile show are on view at the stand of the Firestone Tire & Rubber Company. One is the 1908 Firestone dual non-skid tread and the other is the 1908 Firestone dismountable rim. The dual non-skid, for use on pneumatic tires, consists of two ridges of rubber extending around the tire. This tread is thicker than the regular Firestone wrapped tread, and the surface of the two ridges is corrugated to afford additional protection against skidding. The 1908 Firestone dismountable, which may be used in connection with any clincher tire, has its dismountable portion held on the felloe by six bolts, the removal of the nuts allowing the tire and clincher rim to slide off in one lateral motion, equal merely to the width of the felloe. There is very little contact of metal to metal, thus preventing the rim from rusting on. It cannot creep around the rim, the dismountable portion having clips fastened to its under side, engaging in slots. In addition to these two novelties, the firm's general line of clinchers and quick detachables is shown, and a distribution of a tasty certificate, entirely new in conception and of special value to owners of commercial vehicles, is made at the Firestone booth.

Fisk.—Mechanically fastened tires from the Fisk Rubber Company's factory at Chicopee Falls occupy full attention at this stand, their presentation being made on the three-fold basis of speed, safety, and durability. It is claimed for the Fisk that it cannot possibly come off the rim, whether the tire be inflated or deflated. Fisk clincher tires are made in all sizes, the "Heavy Car Type" being specially recommended for long-wearing quality.

G & J.—The big factory of the G & J Tire Company at Indianapolis supplies specimens of all its lines for 1908, none of which show any great departure from those of the present season. Quality is maintained and improved wherever research has shown that it is possible. The raised tread tire produced a year ago, and which has continued to give excellent service, will continue to be an important feature of the Indiana factory. The strong claim made for the G & J oval raised tread is that it has more frictional contact with the road than any other type. Even when slewing round corners the oval surface always remains in contact with the road. The Indianapolis Dunlop tire is made with non-extensible wires cured in the edges of the case, these wires making it impossible for the edges to stretch over or blow off the rim. Both G & J and Dunlop tires are made with Bailey tread, which to some extent prevents side slipping and skidding, but does not give such long service as the regular raised tread.

Goodrich.—Representative of the huge output from the Goodrich Company's factory at Akron is a big line of the firm's regular stock of goods. There are few or no novelties, but, what is of more importance to the average automobilist, a continuance of the high standard of the firm. The exhibit consists of the regular Goodrich clincher type in smooth, Bailey, and flat treads. Naturally at a time when quick detachables are attracting wide attention on the part of the automobile public, the Goodrich product in this field is not neglected. An opportunity is given of examining in detail and testing as a time saver the Goodrich quick detachable tires and rims. In view of the success of the firm in the touring competitions of the past season, the Goodrich stand and its contents are examined with attention.

Goodyear.—As at last year's automobile show, the principal exhibit of the Goodyear Tire & Rubber Company's stand is the universal rim and detachable tire made up in various types. The firm's new features are a special electric detachable tire and a heavy tourist tire. The electric is used in combination with a special universal rim, made light for the purpose of economy on an electric vehicle. Thus with a 30 by 3 1-2-inch electric tire is

used a 29 by 3-inch rim fitted with tubular side rings, making a much lighter construction than the ordinary 30 by 3 1-2-inch universal rim. This electric tire is made of a special fabric which is very resilient and quite durable. Tests that have been made with it show that it is economical of power, has good wearing qualities and is likely to find special favor on account of the ease with which it may be changed. The heavy tourist tire is made with both flat and round treads, the flat treads being usually used on the rear and the round treads on the front wheels. The flat tread being scalloped, produces a wonderfully efficient non-skid without the use of metal, which generally shortens the life of tires and robs them of some of their resiliency. The heavy tourist is made in the detachable type, is extra heavy and has a good thick inner tube. A full line of clincher, motor truck and motor cycle tires are shown.

Hartford.—Conspicuous in the stand of the Hartford Rubber Works Company, of Hartford, Conn., are Hartford, Dunlop and clincher tires and the new Midgley universal rim. The firm's feature, the Hartford quick detachable clincher tire, has a non-extensible wire edge similar to the Dunlop, with a heel on the side which fits into the clinch of the rim perfectly. There is no toe to the clinch on this tire. The tube lies inside the tire exactly as in the Dunlop. The tire will fit any form of detachable rim.

Leather Tire Goods Company.—Four features from this firm's factory are the 1908 Woodworth tread, Kant-Skid, leather inner tube, and steel tire shoe. Some improvements have been made in the Woodworth tread by the use of a two-ply chrome leather lining in place of the canvas and bark-tanned formerly used. The shape of the rivet head has been so changed that it flanges out at the base, protecting a larger surface and taking a firmer hold in the leather. The leather inner tube is designed to make the tube unpuncturable and proof against any injuries that can be caused by catching on the lugs or under the beads.

Michelin.—The pioneer firm of Clermont-Ferrand, France, now Americanized by the new factory at Milltown, N. J., shows for the first time in America a new compressed tread tire of a remarkable nature. The shape of the tire is such that when mounted on a rim and the inner tube inflated, the rubber on the tread of the envelope is compressed instead of being distended, this compression materially adding to the wearing qualities and general durability of the tire. A cut in an ordinary round tread envelope tends to open and admit water and gravel, to the detriment of the tire and fabric and carcass. A cut in the Michelin compressed tread tire is held closed by the compression of the rubber on the wearing tread, tending to reject instead of admitting sand and water. For heavy road work the Michelin clincher flat tread type of tire is recommended, its broad traction surface giving it a firm grip on the road, which is an advantage in driving and non-skid qualities. The firm's anti-skid type has won for itself a high reputation by being used on the Vanderbilt Cup winner of 1906 and in all the most important events since, with the exception of the Grand Prix, when the compressed tread type was employed. Prominent in the dismountable field is the Michelin demountable rim. The wide margin of security of this rim has been shown by its performance in important automobile races. A quick demountable round tread type made with a stiff wire bead, and which may be easily fitted to any of the well-known detachable rims, will appeal to owners who drive their own cars and wish for ease of removal. All Michelin tires are now made in both American and metric sizes.

Morgan & Wright.—Most prominent in the stand of Morgan & Wright, of Detroit, is the improved Midgley universal rim for use with either clincher or Dunlop tires. When it is remembered that this rim will accommodate every make of clincher or Dunlop, as well as every type of mechanically fastened tire but one, that it is of standard measurement throughout, including inside diameter, and has a solid bead, the strong claims of its inventors would not seem to be exaggerated. Naturally the full line of Morgan & Wright tires are on view.

Motz.—A non-skid cushion tire, claimed to be as resilient as the pneumatic and made to fit any standard clincher rim, is shown by the Motz Clincher Tire & Rubber Company. Demonstrations are given at the stand of the degree of resiliency of this tire and the method of attaching it to any rim.

Pennsylvania.—The changes in the 1908 product of the Pennsylvania Rubber Company are for the most part in material and method of construction. In future the fabric used will be made from Egyptian cotton instead of Sea Island, due to the fact that the former far exceeds the latter in elasticity, and while its tensile strength is no greater, it has been found to resist bursting much more effectively. The fabric is thoroughly impregnated and coated with Para rubber, the tread portion of the tire being composed of a white rubber compound particularly designed to resist wear and abrasion. No change has been made in the shape of the different tires, the flat tread road racing type being particularly intended for use on high-powered cars, as its walls are heavier and tread thicker than the ordinary tire. The Pennsylvania Rubber Company has given particular attention to the manufacture of non-skid tires, and is now marketing one of these equipped with rows of hardened steel rivets extending through a strip of leather into the rubber of the tire.

Pneu L'Electric.—A French production, with the backing of an important home concern, is handled here by agents with offices on Broadway. A full line of various types of pneumatic tires are displayed.

Republic.—Attention here is drawn to a special type of rim fastening constructed at the Republic Rubber Company's factory at Youngstown, O., the claims for which are that it fits the rim exactly and stays there.

Swinehart.—A full display of the regular line of the Swinehart Clincher Tire & Rubber Company is shown on plated rims. In addition are 7-inch commercial, 3-inch dual; a pyramidal, single tube, self-healing clincher pneumatic, and a new cellular tire. The claims for the self-healer are that it is self-healing for all ordinary punctures; can be run flat without injury; there is no friction between inner tube and outer casing; small cuts can be repaired by ordinary single tube repair kit and serious cuts can be repaired by slitting base in center, laying patch inside, coating slit with cement, applying tire to rim and inflating. The Swinehart cellular tire has the same system of fastening to clincher rims as is used on Swinehart solid tires. It has flat tread, is non-skid, and has holes moulded on the slant to prevent picking up gravel stones.

TIRE APPLIANCES, RIMS, AND MISCELLANY

Allen Auto Specialty Co., 1913 Broadway, New York, 1st Gallery 194a
 Gilbert Mfg. Co., New Haven, Conn., 1st Gallery 153
 Long & Mann Co., Rochester, N. Y., 2nd Gallery 352
 Midgley Mfg. Co., Columbus, O., 1st Gallery 117
 Nathan Novelty Mfg. Co., 90 Reade street, New York, 2nd Gallery 345
 Newmastic Tire Co., 68th St. & Broadway, New York, 2nd Gallery 204

Presto Detachable Rim Co., 76 Montgomery street, Jersey City, N. J., 2nd Gallery 341
 Shaler Co., C. A., Waupum, Wis., 2nd Gallery 339
 Schwarz Wheel Co., Philadelphia, Pa., 1st Gallery 182
 Travers Blowout Patch Co., 1265 B'way, New York, 2nd Gallery 315
 Weed Chain Tire & Grip Co., 28 Moore St., New York, 1st Gallery 131

Allen Auto Specialty Company.—This concern makes a specialty of tire protectors, tire holders, and the like, a full line of which are shown at its exhibit.

Gilbert Manufacturing Company.—Fabric supplies for automobile use are shown in a large variety of forms at the exhibit of this firm. Some of these are the Gilbert patent spare tire case, the Gilbert tire sleeves, tool holders, storm helmets, ponchos and the like, as this concern makes a specialty of everything in rubber fabric, though the tire case is the most popular article of this kind, as it has been on the market the longest and is well known.

Long & Mann Company.—"Minute Adjusters," which are claimed to be the best thing ever produced in the shape of a tire tool for clinchers, and also the "L & M" adjusters, for quick-detachable tires, are shown by this firm.

Midgley Manufacturing Company.—While the name of Midgley is chiefly associated in the minds of the autoist and the automobile builder, with the special patented rims of the quick-detachable type brought out by this firm, and which have proven so successful in the past few years that they have been on the market, the firm also makes a specialty of indestructible steel wheels and other pressed steel products for various purposes in connection with automobile construction, such parts combining a maximum of strength and durability with a minimum of weight.

Nathan Novelty Manufacturing Company.—Tire trunks of special design, adapted to carry both outer shoes and inner tubes, special portfolios of enlarged size to hang from the coat rail in the tonneau and intended for carrying maps, goggles, extra clothing and the like, buttoned tire covers and similar articles are a few of the specialties made by this firm in fabric.

Newmastic Tire Company.—Puncture-proof filling for pneumatic tires, known under the tradename of Newmastic, is manufactured by this concern.

Presto Detachable Rim Company.—As its name indicates, this firm manufactures and exhibits a novel form of quick detach-

able rim for pneumatic tires which has numerous features of merit.

Shaler & Company, C. A.—Tire repairs to be permanent must be vulcanized, as the autoist soon learns to his cost and annoyance after having been inconvenienced and delayed by temporary make-shifts. But hitherto it has been impossible to have a repair vulcanized outside of a shop specially fitted for the purpose. This firm makes a special portable electric vulcanizer adapted to repair all but the very worst damage to an inner tube, the device being shown in operation to illustrate the simplicity of its working. They show their complete line, comprising Types B, C, and D, as well as the different attachments for the various models and a complete line of repair materials.

Schwarz Wheel Company.—Wheels for automobiles and heavy vehicles are specialized by this concern. They are built of wood, but by a special method in which all the spokes of a wheel are assembled at one time and under pressure, so that the wheel can be made and shipped without the hub, each of the spokes interlocking with both of its neighbors. The spokes of these wheels cannot loosen and are guaranteed by the makers to stand where all others fail.

Travers Blowout Patch Company.—Unlike many of the devices of this kind designed to effect emergency repairs, the Travers blowout patch is intended to be placed inside the tire. It is made of fabric and tire like a tire tread and is equipped with a brass flange to prevent creeping. It is made in three styles: clincher, Dunlop and Fisk, and is guaranteed as an effective repair for rim cuts or blowouts. An improved type, upon which patents have just been granted, is shown for the first time.

Weed Chain Tire & Grip Company.—There is not much that can be said of the exhibit of this concern that the showing made therein does not say for itself, for Weed chains have become almost as much a part of the car as the tires themselves. Chains hold an honored place in the tool box of every car and they are greeted as familiar friends at the show by the thousands of autoists who see them.

IGNITION: THE CREATORS OF THE VITAL SPARK

HIGH-TENSION SPARK COILS.

Auto Coil Co., Jersey City, N. J.,	1st Gallery 187
Connecticut Telephone & Electric Co., Meriden, Conn.,	1st Gallery 195
Dayton Electrical Mfg. Co., Dayton, Ohio,	1st Gallery 157
Heinze Electric Co., Lowell, Mass.,	1st Gallery 144
Kokomo Electric Co., Kokomo, Indiana,	1st Gallery 170
Splitdorf, C. F., 1679 Broadway, New York,	1st Gallery 106

DRY CELLS AND STORAGE BATTERIES.

American Elec. Nov. & Mfg. Co., 308 Hudson street, New York,	1st Gallery 137
Ampere Mfg. Co., 408 W. 113th street, New York,	2nd Gallery 337
Crown Battery Co., 192 So. Boulevard, New York,	2nd Gallery 314
Eastern Carbon Works, Jersey City, N. J.,	1st Gallery 177
Electric Storage Battery Co., Philadelphia, Pa.,	1st Gallery 148
Gelszler Bros., 316 West 42nd street, New York,	2nd Gallery 312
National Carbon Co., Cleveland, O.,	1st Gallery 115
National Battery Co., 1606 Broadway, New York,	2nd Gallery 322
Witherbee Igniter Co., 519 West 33d St., New York,	1st Gallery 186

TIMING DEVICES, SPARK PLUGS, ETC.

Atwater-Kent Mfg. Works, Philadelphia, Pa.,	1st Gallery 201
Connecticut Telephone & Electric Co., Meriden, Conn.,	1st Gallery 195
Heinze Electric Co., Lowell, Mass.,	1st Gallery 144
Herz & Co., 187 Elm street, New York,	1st Gallery 156
Jeffery-DeWitt Co., 217 High street, Newark, N. J.,	2nd Gallery 356
K. W. Ignition Co., Cleveland, Ohio,	2nd Gallery 319
Kokomo Electric Co., Kokomo, Ind.,	1st Gallery 170
Mosler & Co., A. R., 163 West 29th street, New York,	1st Gallery 185
Splitdorf, C. F., 1669 Broadway, New York,	1st Gallery 106
Triumph Engineering Co., 226 Lafayette St., Brooklyn,	2nd Gallery 320

MAGNETOS AND DYNAMOS.

Dayton Electrical Mfg. Co., Dayton, O.,	1st Gallery 157
Igniter Appliance Co., Cleveland, O.,	1st Gallery 194a
K. W. Ignition Co., Cleveland, O.,	2nd Gallery 319
Lavalette & Co., 112 West 42nd street, New York,	2nd Gallery 331
Remy Electric Co., Anderson, Ind.,	1st Gallery 167
Splitdorf, C. F., 1669 Broadway, New York,	1st Gallery 106
Western Electric Co., Chicago, Ill.,	1st Gallery 128



PROBABLY there is no other branch of the accessory field pertaining to the car which holds such a fascination for the average visitor to the show as does the array of ignition apparatus, most of which is shown in operation by the various makers who devote their attention to the production and improvement of this most essential part of the power-plant. The crackling sparks of the induction coils, the spark plug that will spark under water or oil or anywhere else for that matter and that is always sparking, the inexhaustible dry cells and storage batteries and the dozen and one timers, coils, switches, magnetos, dynamos and other things designed to generate or handle the mysterious force that fires the charge when it occurs at the right time and place, are all matters of absorbing interest to the experienced hand as well as to the tyro who sees many of them for the first time. Improvements are so numerous and so interesting that neither type of autoist is anxious to miss any of them but wishes to learn of everything new that is to be seen in the entire show, and that is a great deal, as may be seen from the following review of what the principal makers reveal.

Auto Coil Company.—This firm shows a line of spark coils and accessories which are well known to the autoist through having been specified on many prominent American cars.

Connecticut Telephone & Electric Company.—"Connecticut" spark coils, in both automobile and marine types, special removable lever switches, plug switches, coil-current indicators, and similar specialties form the exhibit of this concern, which has achieved a name for itself within the past few years by the quality and grade of workmanship displayed in its products. The standard unit type dash coils are shown with all number of units from two to six. They are inclosed in mahogany cases, and the terminals are protected, while the switch is also waterproof, thus making them especially adapted for cars in which the coil is mounted on a flat dash and receives no particular protection from rain and snow. The marine coils are shown in one and two-cylinder types, and are of a special form of construction, designed particularly for this work, where it is highly essential that no part of the ignition apparatus give out.

Dayton Electrical Manufacturing Company.—The exhibit of this concern consists of a complete dynamo and storage bat-

tery charging system in complete working order. The outfit consists of the well-known Apple dynamo, the No. 12-S switchboard and a portable lead bottle-type of accumulator. The switchboard makes all necessary connections between the battery and the dynamo, and also serves to show the operator exactly the condition of the current supply at all times. The dynamo is friction-driven from a heavy wheel representing the flywheel of an engine, and is charging the battery as in actual service. The timers, coils, and plugs of the system are all in plain sight of the spectator, so that the working of the system may be seen at a glance. It also shows exactly the nature of the spark produced, which is something that interests every autoist, as there are but few who have never experienced ignition trouble in some form or other.

Heinze Electric Company.—This concern has long been identified with the manufacture of high-tension induction coils for use in connection with X-ray apparatus, calling for extremely powerful and necessarily well-built coils, so that they are in an excellent position to understand the requirements of coils for ignition purposes, which they have now been making for three or four years past. They are made in interchangeable unit types from two to six-cylinder styles, and are mounted in weather-proof mahogany cases with switch, for mounting on the dash. The line shown is familiar to the average autoist through its being specified as the regular equipment of such a number of well-known cars, while the Heinze coils have also figured prominently in racing events, such as on the Christie front-engine racer in the last Grand Prix in France.

Kokomo Electric Company.—This concern makes the well-known line of Kingston coils and also several other ignition specialties, all of which are shown in attractive form at their stand. The coils are made in the standard unit types for cars of any number of cylinders, many of the now-popular six-cylinder type being shown. They also show single-cylinder box coils, motorcycle coils and the Kingston multiple-point switches for automobile and motor boat use.

Splitdorf, C. F.—The Splitdorf synchronized distributing coil forms the chief object of attraction in the numerous line of ignition specialties exhibited by this old-established firm. It represents the culmination of years of study of the subject of firing a multi-cylinder engine with a single coil and vibrator. This is accomplished at exactly the proper time in each cylinder without any of the detrimental effects usually experienced with a single coil, as a different unit supplies the secondary current for each cylinder. The distributing vibrator is independent from the coil units, being a separate instrument, but is included in the

coil box, being so placed that it may be easily adjusted at any time. The adjusting parts are of the tension vibrator type, with a ratchet screw for adjusting the vibrator point and a thumb screw for adjusting the tension of the vibrator spring, there being no necessity for the use of tools in either case. These new coils are made up in any number of units, and are mounted in the standard type of mahogany cases employed for other Splitdorf coils are made up in any number of units, and are mounted in the prehensive showing of the varied line of ignition apparatus made by this firm.

DRY CELLS AND STORAGE BATTERIES.

American Electrical Novelty & Manufacturing Company.—This concern is the originator of the numerous "Ever-Ready" specialties, their Ever-Ready dry cells being one of the first on the market, specially made for automobile ignition service. These batteries are made in all sizes, and are put up for both automobile and motor boat use.

Ampere Manufacturing Company.—This concern exhibits a line of dry cells for automobile, gas engine, and telephone work, known as the "Best" dry batteries.

Crown Battery Company.—This firm's exhibit consists of a showing of the Crown high-grade cells in different sizes and shapes, as well as the different elements of which they are composed.

Eastern Carbon Works.—Eastern gas engine dry cells are shown by this concern, which devotes itself entirely to the manufacture of a special type of cell particularly designed for the rigorous service required in automobile work. They also make the Eastern battery connectors, which are guaranteed not to shake loose under the most severe conditions of vibration or jolting. Autoists interested in dry-cell ignition will be able to note the improvements made in the manufacture of these essentials as shown by the Eastern line, the representatives of the latter making tests showing the amperage of their cells, both when new and old.

Electric Storage Battery Company.—This concern makes a showing of its line of chloride accumulators for automobile use.

Geiszler Brothers.—Long life and economy of maintenance are two of the good qualities claimed for the Non-sulphating Storage Battery Igniter, which is the subject of this firm's exhibit. It is said to cost but 50 cents for recharging the accumulators, and they are guaranteed to give a working charge until entirely exhausted, the plates being so formed that they will not disintegrate under the vibration or jolting of a car, and will not sulphate. They are assembled in waterproof cases, and are especially adapted for both automobile and marine use.

National Carbon Company.—The showing of this concern consists of the well-known line of Columbia dry cells, which are shown in five different sizes. In addition to this they are also showing the "Red Top Columbia Igniter" cells, which are manufactured especially for automobile use, their composition being the result of several years' study and experience in catering to the wants of this service, which is unusually exacting. In connection with their exhibit they are distributing a new pamphlet entitled "Helps and Hints of the Motor Car," which has just been issued, and which contains a great deal of information concerning this essential part of the car, that will be found of value by every autoist. Copies will be mailed gratis on application.

National Battery Company.—Sparker, vehicle, and truck batteries form the exhibit of this concern, a new method of assembling and sealing the sparking batteries having been made in the 1908 models of these accumulators. They are shown in the six-volt, sixty-ampere hour type, and the six-volt, forty-ampere hour type, both of which are operating spark coils and lamps. The National method of sealing, which dispenses with the use of the usual sealing compounds, is also displayed. The complete components of the National are shown mounted on an ornamental panel, from which an idea of the construction is obtainable.

Witherbee Igniter Company.—In addition to the well-known Witherbee storage batteries, this concern is showing something entirely new in the shape of a spark plug, which is attracting considerable attention. This, as well as a number of other ignition utilities, have been designed and patented by W. W. Robinson, the concern's mechanical engineer, and are being marketed under the trade name of "Wico." The chief point of distinction about the spark plug is a micrometer adjustment, by means of which the exact distance between the sparking points may be set to any determined width to .001 inch, instead of by guesswork with a pair of pliers, as formerly. The Wico timer is also a new departure, a loose ring always providing a smooth path for the roller and exposing a constantly changing surface of contact to eliminate wear. It operates with metal to metal contact, without noise, and is extremely compact, although it provides about 3-8-inch surface for each contact. The Wico trouble lamp is another compact novelty much appreciated by the autoist, while the Wico plug switches are a novelty that is now being shown for the first time. They are made either single or in gangs up to four, to light the side, gage, and tail lights, also the dome light simultaneously, working on the "touch the button" principle.

TIMING DEVICES, SPARK PLUGS, ETC.

Atwater-Kent Manufacturing Works.—The exhibit of this concern is doubtless one of the most interesting to be found in the show in the line of ignition apparatus. One of its spark-generating outfits was officially sealed in a glass case, together with six small dry cells to supply the current, after the recording apparatus had been duly inspected by experts. The device is driven from outside by means of a small electric motor, a speedometer and odometer being attached to indicate the equivalent rate of speed traveled and the distance covered during the time the test is on. The latter is intended to demonstrate the reliability and low battery consumption of the Atwater-Kent apparatus. In addition to this, they also show their regular line of spark generators, meters, and switches.

Herz & Co.—The Herz ball-bearing timer is one of the chief attractions at the exhibit of this concern, which is chiefly devoted to a showing of timers of various styles. There is nothing so essential to the success of an ignition system as a good timer, and as this firm has made a study of this part of the problem for several years past, the apparatus it shows reveals the results of much careful experimenting. They also show the Pater-Noster shock absorber, which has now been on the market for two or three years past, and has proved very successful. It is a combination of the friction and hydraulic types, the working parts operating in glycerine, and is extremely compact and simple, as well as easy to attach to the car. Some of the other specialties are the new "Oscillum Redivivus," or auxiliary spark gap of improved type, battery connections, patent wire terminals, patent safety switch and electric emergency brake, Puck waterproof switch and others, such as the Herz anti-skidding tires, imported storage batteries, the Motor-Whistle for motor boats, steel-armored ignition cable, French coils, Herz distributors, etc.

Jeffery-DeWitt Company.—This firm exhibits the Reliance spark plug and its demonstration is one of the things that will considerably puzzle the average autoist, as one of the plugs is shown sparking under water. To quote the makers, "The Reliance spark plug is the result of the discovery of a phenomenal action of the electric current when discharging from a minute platinum electrode embedded in and brought flush with the face of the insulating block, thereby concentrating and intensifying the spark so that it not only destroys all short-circuiting matter, but prevents its deposit." The Reliance plug is patented in France and Belgium, while U. S. and other foreign patents are pending.

K-W Ignition Company.—This concern exhibits what is practically a new system of ignition. It is of the standard high-tension type, but it is novel in that a magneto is employed in connection with a simple vibrating coil. The former is the K-W

magneto, of extremely simple and compact design, and which has been described in these columns recently, and the other essential is the K-W Master Vibrator, by means of which exact synchronism in the ignition is obtainable with any number of cylinders, as there is but one vibrator and the adjustment is the same for all cylinders, thus overcoming the great loss of power in the average engine, due to the lack of synchronism arising from the difficulty of adjusting four or six vibrators to work together. Another specialty made by this firm is the Vim spark plug, which has many features of merit.

Mosler & Company, A. R.—The name of Mosler and that of "Split-Fire" plugs have been so long associated as to have become practically synonymous, so that the average autoist knows one as well as he does the other. In addition to this well-known line of plugs, this company also exhibits numerous other ignition specialties of their own exclusive design and construction, and they have prepared an attractive booklet setting forth the details of the Mosler ignition outfits for 1908, which will be presented gratis to visitors or sent on application.

Triumph Engineering Company.—This firm exhibits a line of Holsten spark plugs, for which numerous advantages are claimed.

MAGNETOS AND DYNAMOS.

Lavalette & Company.—This company controls the American patents covering the well-known Eisemann system of high-tension ignition, the magneto being of the type familiarly known as "high tension with coil," in that it generates an alternating current of low-tension which is then passed through a powerful

non-vibrating induction coil and subsequently distributed to the plugs as high-tension current by a special synchronously run distributor forming part of the magneto itself. There have been numerous improvements made in these generators and their accessories during the past year, all of which are exhibited and demonstrated by this firm.

Remy Electric Company.—The chief novelty at this exhibit is the new Type F magneto, now being publicly shown by this concern for the first time. It represents the simplest jump-spark ignition equipment that can be installed on a four-cylinder engine and can be installed with a minimum. No coil is employed, and the same magneto is equally applicable to a single or twin-cylinder engine. The complete wiring installation consists of a single primary wire leading to the switch and a wire from each secondary outlet to the plugs. The generator itself is extremely simple, having but one shaft, instead of two, as used on most high-tension magnetos, and being free from the complication of a geared distributor. It is designed to be gear-driven at the same speed as the crankshaft of the motor, the distributor consisting of a hard rubber drum on which are mounted contact segments, brushes conducting the high-tension current to the cables leading to the plugs. A simple push-button switch may be mounted on the steering wheel for stopping.

Western Electric Company.—One of the departments of this large concern is devoted to the manufacture of battery-charging dynamos and motor-generators, of which examples are shown in their exhibit, together with other specialties they make for the automobile trade.

LUBRICATING OILS, GREASE, GRAPHITE, ETC.

Dixon Crucible Co., Joseph, Jersey City, N. J.,
Harris Oil Co., A. W., Providence, R. I.,
Miller's Sons, W. P., Long Island City,
New York & New Jersey Lubricant Co., 14 Church
street, New York,

1st Gallery 175
1st Gallery 149
2nd Gallery 330
1st Gallery 164

LUBRICATING APPLIANCES.

Hancock Mfg. Co., Charlotte, Mich., 1st Gallery 195a
Pedersen Mfg. Co., 636 First avenue, New York, 1st Gallery 204
Randall-Faichney Co., Sudbury Bldg., Boston, Mass., 2nd Gallery 340

Dixon Crucible Company, Joseph.—Graphite as applied to automobile lubrication tells the story of the exhibit of the Dixon stand, and it is a subject at which the makers of graphite in its various forms have been hammering ever since there has been such a thing as an automobile. That is now several years, and in that time they have learned considerable about it, and their salesmen and demonstrators are willing to give the benefit of the knowledge gleaned by the firm's experts to any maker or autoist who wishes to be enlightened on this up-to-date and efficient method of lubricating certain parts of the car.

Harris Oil Company, A. W.—To the average autoist oil is simply oil, and nothing more; usually he thinks it ought to do the business of lubricating the motor properly as long as it is oil. Some idea of how many different grades of oils there are, as well as the correspondingly numerous purposes to which they are put, may be gleaned from the instructive exhibit of the A. W. Harris Oil Company, Providence, R. I.—a firm that has long made a specialty of refining lubricating oils for automobile use. The requirements of this service have been closely studied, and as a result these refiners are in a position to supply oils of exactly the nature required for each different purpose on the car.

Miller's Sons, W. P.—This concern is an old house in the business of refining lubricating oils, and during the past few years have paid special attention to the manufacture of oils particularly for automobile use.

N. Y. & N. J. Lubricant Company.—The exhibit of this firm has been a familiar sight at automobile shows almost since there has been such an institution in this country, and their non-fluid oils are equally well known to the American autoist, as they are

frequently specified for particular uses. The makers are warning the trade to beware of infringements of their methods of packing and advertising, which are calculated to mislead. Their non-fluid oils are put up in orange-colored cans, and as they are the originators and sole makers of this class of lubricants, this is the only form in which they can be purchased. They are issuing a booklet entitled "The White Boa," which is interesting.

LUBRICATING APPLIANCES.

Pedersen Manufacturing Company.—Pedersen stands for lubricators, of which this firm shows a number of styles, particularly designed for automobile and motor boat use and finished in accordance with the requirements of such service. They manufacture pressure and mechanical force-feed oilers in any number of feeds, and their apparatus has numerous points of advantage. The pressure types are instantly convertible into gravity feed, or both may be used simultaneously, thus providing a safeguard against breakdown, while their mechanical types are of a particularly ingenious and simple design.

Randall-Faichney Company.—The name of this firm and their product, the "B"-Line oil guns and grease, have become inseparably associated to the show-going autoist, while the product itself is so universally used that its makers' recommendation "the handy gun for unhandy places" is one that finds innumerable believers among the autoists of this country. These guns are of high-grade manufacture, all of metal, and are designed particularly with a view to fulfilling the reputation their makers give them, that of being able to put the oil exactly where it is wanted, regardless of the inaccessibility of the bearing, and without wasting it on other parts where it is not wanted.

TELL HOW MANY AND HOW FAST ARE THE MILES

Auto Improvement Co., 216 Hudson St., New York, 1st Gallery 138
 Hicks Speed Indicator Co., Atlantic Ave., Brooklyn, 2nd Gallery 333
 Index Speed Indicator Co., Minneapolis, Minn., 1st Gallery 145
 Jones Speedometer Co., 2228 Broadway, New York, 1st Gallery 199
 Loring Auto Appliance Co., 1900 B'way, New York, 2nd Gallery 327
 Motor Car Specialty Co., 112 N. Broad St., Phila., 1st Gallery 120

Rountree-Stimmel Auto Check, 220 B'way, New York, 2nd Gallery
 Smith, R. H., Mfg. Co., Springfield, Mass., 1st Gallery 154
 Stewart & Clark Mfg. Co., 506 Diversey Blvd., Chicago, 1st Gallery 203
 Veeder Mfg. Co., Hartford, Conn., 1st Gallery 113
 Warner Instrument Co., Beloit, Wis., 1st Gallery 179
 Winchester Speedometer Co., 1557 B'way, New York, 1st Gallery 189

Auto Improvement Company.—The "Ever Ready" specialties form the subject of this firm's exhibit, and under this title they list a patent self-starting mechanism for automobiles, the Ever Ready speedometer, the Ever Ready carbureter, the Ever Ready vulcanizers, and the Ever Ready tire tool.

Hicks Speed Indicator Company.—The instrument shown by this concern is one of the most complete of its kind on the American market, in that it records speeds, trip distances, and total mileage, besides giving the time, as it is combined with a neat clock movement, the face of which forms part of the dial of the instrument, but in no way interferes with the reading of the latter. No less than four sets of ball bearings are used in its construction, and it is built to register as accurately as it is possible for an instrument of this kind to do. It is inclosed in a rectangular, polished brass case, adapted to be fastened to the dash, while the dial face is placed at an angle so as to be plainly seen from any part of the car. The dial is calibrated up to 75 miles an hour and the reading is constant, the hand not being affected by the jolting or vibration of the car.

Index Speed Indicator Company.—The instruments marketed by this concern, which were formerly known as the Oliver, are shown in operation, and the makers call particular attention to the flexible shaft-drive—an essential part of all speed and distance-recording devices that is a prolific source of trouble. The index shaft is milled from solid steel rod and made into universal joints, which are connected with a steel wire in such a manner as to give great strength and durability. This universal shaft runs inside a flexible tube, which in turn is inclosed in a brass casing. The steel tube is spaced so as to hold a large amount of graphite for lubrication. The Index adjustable universal bracket is also made of steel and is applicable to any make of car. The instrument itself has now been on the market for two years and has met with considerable success.

Jones Speedometer Company.—The Jones Automatic Speed Control Governor is the center of attraction at the exhibit of this company, as it is the very latest thing to be brought out in this field. It is the invention of Joseph W. Jones, head of the company, and through its use the owner of the car may positively control its speed, even though he be sitting in the tonneau. The device consists primarily of a speed indicator, an automatic circuit-breaker, a controller, and an electrically operated air-valve. The operation of this combination of devices depends upon a switch having five contact points, each of which represents a circuit, the switch being automatically operated by the action of the centrifugal governor of the speed indicator. This switch is so arranged that when a speed of ten miles an hour is reached by the indicator it will close the circuit through the first contact point; when the hand reaches the 15-mile mark, the switch closes the second circuit, and so on with the remaining points, which correspond to certain speeds per hour, so that the occupant of the tonneau by merely setting a switch to a certain point can keep the car going at a certain speed, regardless of the desires of the chauffeur, as immediately the speed set is exceeded the ignition current of the motor is automatically cut off by the operation of the circuit-breaker, or by closing the circuit, instead of breaking it, the electrically-controlled air-valve is operated and the air or gas supply to the engine is cut off. Once the car's speed drops again until slightly below the limit marked, as nine miles an hour when set for ten, the device automatically renews the connection, thus acting as a governor.

Loring Auto Appliance Company.—Although the Loring Speed Gauge is not new, this is the first time it has been exhibited at any of the New York shows. Several improvements have been made in the instrument during the past year, though the principle remains the same. The dial is now of aluminum, instead of paper, and the protecting glass magnifies the figures several times. The case is now made in one solid piece, instead of with a detachable bottom, as formerly. The Loring Speed Gauge is one of the smallest instruments of its kind on the market, but is extremely easy to read, owing to the unusual length of its dial. It is neat, compact, and permanent in accuracy, while a flexible shaft is arranged to receive the least wear possible, thus making it extremely durable.

Motor Car Specialty Company.—This exhibit is the combined showing of the above-named concern and that of William S. Jones, who is their sole selling agent. The chief object of interest is the Phelps vehicle recorder, which is now shown publicly for the first time. It is a device which automatically records the movement of vehicles of all kinds, whether horse or motor-driven. It consists of an aluminum case, securely locked, containing a clock and the remaining mechanism, which records on a sensitized slip of paper. Another specialty is the Lea Speedistimeter, which has been entirely redesigned and greatly improved, while a third is the New Boss gasoline filter designed to be attached to the fuel pipe line of any car.

Rountree-Stimmel Auto Check.—As an improvement on the type of speed and distance-recording instruments now on the market, this firm is making one which not only indicates the speed, but prints a permanent record of the speed of the vehicle, the time, and all the stops made while it was out. It is termed the Auto Check, in that it keeps tab on the chauffeur who would take his master's car out without the latter's knowledge, and also provides competent evidence for use in a police court when accused of exceeding the legal speed limit. This traveling tape is 3-4 inch wide and is operated by the clock mechanism. It is marked in vertical lines which represent minutes and hours, while the speed is indicated by the strokes of the pen on the paper, each up stroke representing half a mile. When the car stops the tape is automatically disconnected from the clock and ceases to run until the car is started again. It is impossible to beat the instrument, as this has been amply provided against by the method of its attachment.

Smith Manufacturing Company, R. H.—The several important improvements that have been made in the Smith Motometer for 1908 are being demonstrated at this concern's exhibit. The principle of the instrument remains unchanged, but new features have been added. The chief of these is the new maximum speed hand, the vertical dial of the Motometer being particularly adapted to the use of the second hand, as when the latter is not in use, which is effected merely by pushing a button, it is entirely out of sight and does not confuse the driver. When working, this hand indicates the maximum speed reached, being picked up and carried over the scale by the regular indicating hand in its travel and left at the highest point when the latter recedes as the speed again falls off, thus providing indisputable evidence of the highest speed at which the car was traveling. A particular feature of the Motometer is the universal attaching bracket supplied, as this may be assembled to fit any car, whether the knuckle is high or low or whether it is forward or back of the axle.

Stewart & Clark.—Special pains have been taken by this firm to show their speedometers in the most attractive manner. For this purpose a special cabinet has been constructed, in which five of the instruments are shown in operation. They are all lighted by concealed electric lights from above, making the dials stand out very plainly, while the instruments themselves are operated by a small electric motor in the lower part of the cabinet and which is also invisible. Each one runs at a different speed, and the steadiness of the indicating hands at the various rates gives the visitor an excellent idea of the performance of these instruments when in actual service. Mounted in the center of the display board is a speedometer of the same make but of twice the ordinary size, which accentuates its details. The cabinet itself is of quarter-sawed oak in Old English finish, and makes a very attractive show piece.

Veeder Manufacturing Company.—The name Veeder is so inseparably associated with speed and distance-recording instruments that it is hardly necessary to mention that this is the nature of their exhibit. The Veeder Tachodometer is of particular interest, as it is the only instrument of its class on the market which works on this principle. The indicator, which is curved in the section of a circle, shows the speed of the car from zero to 64 miles, or when required to have close readings at slower speeds, the scale reads from 0 to 32 miles an hour. On the latter, it is only necessary to move a small lever to the right and the instrument is adjusted for high-speed work, the value of the readings then being double and corresponding to the higher scale. Among the numerous advantages of this instrument is the entire absence of springs or delicate moving parts.

Warner Instrument Company.—Principal stress is being laid by these makers upon the principle of the Warner Auto-meter, and the manner of its drive, in their exhibit. The principle upon which it works is magnetic, and it is the only instrument of its kind on the market. It consists of a circular magnet and a field ring located just above the disk of the dial, so that the tendency of the magnet in revolving is to turn the dial in the direction of its own revolution, this rotation being naturally in proportion to the speed of the magnet, while a hair-spring acts as a controlling force which always tends to return the dial to zero. The strength of this spring increases with the angle of its displacement, so that the dial is marked off in equal divisions throughout the length of the scale. As the magnet acts directly on the indicating dial, there are no intermediaries between the two. The Warner Auto-Meter is driven from the front wheel in the usual manner, but the shaft is of a special type, as is also the drive, using case-hardened spiral gears.

Winchester Speedometer Company.—As its name indicates, this concern shows a combined speedometer and odometer, which is exhibited in operation. It is triangular in shape, with a round-faced dial, and is extremely compact. The new Model H is equipped with a maximum or high-speed record hand, indicating the highest speed attained, while the new reinforced case prevents shaft-breakage as well as the other annoyances arising to cause this essential to go wrong. The makers have also perfected an attaching bracket that fits 90 per cent. of the cars now on the market without change, and sum up the improvements made on their speedometer by calling attention to its finish, which makes it "a fine instrument for a fine car."

WITH THE UNIVERSAL PROVIDERS.

Brooke Auto Supply Co., 197 Fulton St., New York,	2nd Gallery 302
Miller, Charles E., 97 Reade street, New York,	1st Gallery 218
New York Sporting Goods Co., 17 Warren street, New York,	2nd Gallery 350
Post & Lester Co., Hartford, Conn.,	1st Gallery 216
Wooster, Wm., 88 Chambers street, New York,	2nd Gallery 318

Brooke Auto Supply Co.—This concern is a newcomer in the list of New York's universal providers, and as jobbers and retailers show a line of wind shields, license hangers, tops, top covers, tire covers, generators, tire holders, and the like. This company makes a specialty of registering applicants for licenses, whether for cars or as chauffeurs, both for New Jersey as well as for Pennsylvania, and can equip a car with the proper lamp numbers and license hangers.

Miller, Charles E.—"Miller," the supply man's stand," is the way the exhibit of this most universal of all automobile providers is generally dubbed by every one at the show, for there is seldom a show in New York without Miller, and what Miller hasn't got in the automobile accessory line is hardly worth having, because if there's a demand for an article Miller is bound to have it. If no one happens to be making it at the time, he will get some one to manufacture it for him. Miller's exhibit suffices to give a pretty good idea of the wide range of things he carries, and a visit to his headquarters is positively a revelation.

New York Sporting Goods Co.—During the past few years this concern has added a comprehensive line of automobile specialties to the goods it handles, many of them being exclusive representations in this territory. Horns, lamps, speedometers, tools, tire repair kits, batteries, and a hundred and one other things too numerous to mention are to be found at its booth, including necessities and luxuries.

Post & Lester Co.—This firm has always been prominent as one of the pioneers in the general supply line. They have been so progressive that anything in the shape of an automobile accessory that they do not handle on representation—usually exclusive in their special territory, embracing

practically all of New England—they import from the other side, or have made for them. Their imported lines are numerous, and they also have a number of articles made especially for them which they put out under their own name, so that their booth cannot fail to be of interest. Some of the chief lines shown are the Volier horns, Royal De Luxe lamps and Duray goggles.

ALUMINUM, BRONZE, AND STEEL CASTINGS.

Cramp & Sons, Wm. S. & E. B., Co., Philadelphia, Pa.,	1st Gallery 162
Johnson, Isaac G., & Co., Spuyten Duyvil, N. Y.,	2nd Gallery 348
Light Mfg. & Foundry Co., Pottstown, Pa.,	1st Gallery 178

Cramp & Sons, Wm. S. & E. B. Co.—Manganese bronze castings of every conceivable shape for automobile use are specialized by this great shipbuilding house.

Light Mfg. & Foundry Co., Pottstown, Pa.—Aluminum alloy castings for automobile and marine motor parts are specialized by this firm, and numbers of the various types of parts supplied for different makes of cars are shown.

AUTOMOBILE CLOTHING.

Morrison-Mackintosh & Co., Grinnell, Iowa,	2nd Gallery 334
Scandinavian Fur & Leather Co., 14 West 33d street, New York,	1st Gallery 227

Morrison-Mackintosh & Company.—The "Grinnell Ristfit" glove is one of the specialties of automobile wear manufactured by this firm and now shown for two or three seasons in succession. It is made in both the special ventilated and the plain unventilated types, the former being covered by a patent. Both styles are made of reindeer leather, which is well known for its softness and pliability. They are made in black, tan and drab, and with the plain back are lined with silk or wool for winter use.

Scandinavian Fur & Leather Company.—As this year's first show is coincident with the beginning of cold weather, the autoist's thoughts turn to wishes for warmer outer coverings and this firm is well equipped to satisfy such longings.

LAMPS WHICH SHOW THE ROAD FAR AHEAD

Badger Brass Mfg. Co., 437 Eleventh Ave., New York, 1st Gallery 111
 Edmunds & Jones Mfg. Co., Detroit, Mich., 1st Gallery 184
 Gray & Davis, Amesbury, Mass., 1st Gallery 103
 Ham Mfg. Co., C. T., Rochester, N. Y., 1st Gallery 139
 Manhattan Screw & Stamping Works, New York, 1st Gallery 151
 Rose Mfg. Co., 910 Arch street, Philadelphia, Pa., 1st Gallery 109

Saxon Lamp Co., 530 West 28th street, New York, 2nd Gallery 321

HORNS TO HELP CLEAR THE WAY.

Automobile Sup. Mfg. Co., 147 Emerson Pl., Brooklyn, 2nd Gallery 347
 Gabriel Horn Mfg. Co., Cleveland, O., 1st Gallery 198
 International Auto Horn Mfg. Co., New York, 2nd Gallery 310
 Manhattan Screw & Stamping Works, New York, 1st Gallery 151

Badger Brass Manufacturing Company.—The exhibit of "Solar" lamps is one of the most interesting of its kind in the show. Four different styles of headlights are displayed and they are shown in four different sizes. After three years' study of the question a special weatherproof finish has been adopted that is indestructible and always remains the same. This firm has also acquired the sole rights to manufacture the Besnard French lamps in this country.

Edmunds & Jones Manufacturing Company.—E. & J. lamps are shown in as many different styles as it is possible to make a lamp for automobile purposes and still keep within the bounds of the practical. While intended for ornamental as well as useful purposes, a lamp must first of all be a reliable article and give satisfactory service, and the makers of this line have not neglected the business end of the illuminator for the ornamental.

Gray & Davis.—Few concerns in the business of manufacturing automobile lamps have been responsible for a greater number of distinctive styles than are credited to these makers, and their exhibit is correspondingly attractive. Their showing for 1908 is even more comprehensive than in past seasons, and a great many styles of side and tail oil lamps, also acetylene headlights and searchlights, are exhibited.

Ham, C. T. Mfg. Co.—Lamps and more lamps, big, little, and intermediate sizes, are shown by this firm, and although its line in the main is similar to that which met with such success during the past season, touches have been added here and there to make the lamps even more attractive looking than they have been in the past. As the makers say themselves: "They are very different looking articles from what they were three years ago."

Manhattan Screw & Stamping Works.—"Phoebus" lamps and generators, "Apollo" exhaust horns, flexible tubing, horn screens, tire holders, oil-guns, pumps, and the like are the

specialties manufactured by this concern. They make "Paraobolens," mirror back and lens mirror headlights in a number of types, searchlights on swivel and rigid brackets, limousine square side and tail lamps, and the "Tattle-Tale."

Rose Manufacturing Company.—"Neverout" lamps, patent generators, searchlights in both automobile and marine types, combination oil-burning launch lights, and similar lines form the showing of this firm, and as it has been making "Neverout" lamps since early in the days of the bicycle, it is hardly necessary to say anything further for them. The "Neverout" patent safety gas producer is of the hydro-pneumatic type.

Saxon Lamp Co.—The *piece de resistance* of this exhibit is a duplicate of the Saxon Model 400 lamp which proved its merits so effectively at the 24-hour races at Morris Park recently, but in place of the bull's-eye portion of the lens there has been inserted a high-grade French clock movement just filling the circular space. In other respects the lamp is an exact replica of those destined for service, with the exception that the brass body has been gold-plated. This ornamental piece will later be presented to the Automobile Club of America.

HORNS.

Gabriel Horn Manufacturing Company.—The Gabriel horn has tooted its way into the affections of the autoist so effectively that it has become one of the best-known articles of its kind on the market and as such scarcely calls for description, except that the makers have so improved on the original that the new Gabriel 28-Chime horn is but a fraction of the size of its prototype and has been bettered in many ways. This firm also shows the Gabriel shock absorber.

International Auto Horn Mfg. Co.—This firm is said to have one of the most complete plants for the manufacture of automobile horns in this country, S. Salvini, its president, having been in the business for a number of years.

SHOCK ABSORBERS: SMOOTHING OUT THE ROAD

Diezeman Shock Absorber Co., Hoboken, N. J., 1st Gallery 142
 Gabriel Horn Mfg. Co., Cleveland, O., 1st Gallery 198
 Herz & Co., 203 Lafayette street, New York, 1st Gallery 156
 Hotchkin, P. N., Mfg. Co., Chicago, 1st Gallery 132

Hartford Suspension Co., 67 Vestry street, New York, 1st Gallery 165
 Sager Co., J. H., Rochester, N. Y., 1st Gallery 146
 Supplementary Spiral Spring Co., St. Louis, Mo., 2nd Gallery 359
 Victor Shock Absorber Co., 1931 B'way, New York, 2nd Gallery 354

Diezemann Shock Absorber Company.—The exhibit of this concern consists of a complete showing of the 1908 model of the Diezemann Shock Absorber, together with a number of parts showing the method of its working. In the new models, the metal parts are all drop-forgings of high-grade steel and the arms are provided with universal joints, the latter being fiber-bushed to eliminate wear and rattling.

Hartford Suspension Company.—Some very radical changes have been made in the Truffault-Hartford shock absorber for 1908, and the details of these improvements as well as the benefits to be derived from them is the subject of the firm's exhibit. In order to be able to adjust all four shock absorbers on a car so that they will not only act all at once, but all to the same degree, an indicating dial, consisting of a number of figures and an arrow, has been made a feature of the 1908 models.

Hotchkin Manufacturing Company.—This concern exhibits both its new model of the Hotchkin Anti-Jolt device, known

as Model 101, and also the former type, known as Model 100. The new model is patterned after exactly the same design as the former model, with the exception that the lugs are placed on the back, so that it may be fastened directly to the frame of the car instead of on the bottom, as previously. The famous Hotchkin "Teddy Bear" is again a drawing card.

Sager Company, J. H.—This firm shows the Sager Equalizing Springs, and the success they have met with in the past few years is amply testified to by the growing list of the most representative American cars on which they are used. They have been making springs for many years.

Supplementary Spiral Spring Company.—These springs are such a familiar sight in the average rear view of an automobile that neither their construction nor their purpose are new to the autoist. They are covered by patents and the makers are warning the trade and users to beware of infringements, which are not only closely patterned after the original, but are also similarly named.

COMPONENTS: MAKERS OF AUTOMOBILE PARTS

American & British Mfg. Co., Bridgeport, Conn.,	1st Gallery 125
Brownell-Trebert Co., Rochester, N. Y.,	1st Gallery 219
Cramp & Sons, Wm., S. & E. B. Co., Philadelphia,	1st Gallery 162
F. R. V. Auto Parts Co., 116 Nassau St., New York,	2nd Gallery 325
Gemmer Mfg. Co., Detroit, Mich.,	1st Gallery 193
Gray-Hawley Mfg. Co., Detroit, Mich.,	1st Gallery 190
Hartford Auto Parts Co., Hartford, Conn.,	1st Gallery 150
Kinsey Mfg. Co., Dayton, O.,	1st Gallery 196
McMullen, Roger B., Chicago, Ill.,	2nd Gallery 329
Shelby Steel Tube Co., Pittsburg, Pa.,	1st Gallery 114
Standard Brake Co., 101 West 66th street, New York,	2nd Gallery 335
Standard Welding Co., Cleveland, O.,	1st Gallery 160
Warner Gear Co., Muncie, Ind.,	1st Gallery 176

RADIATORS: COOLING THE MOTOR.

Briscoe Mfg. Co., Detroit, Mich.,	1st Gallery 163
Haynes Mfg. Co., Detroit, Mich.,	1st Gallery 140
Kinsey Mfg. Co., Dayton, O.,	1st Gallery 196
Metal Stamping Co., 50 Hubert street, New York,	2nd Gallery 307
Whitlock Coil Pipe Co., Hartford, Conn.,	1st Gallery 102

TOPS: PROTECTION FOR THE PASSENGERS.

Auto Accessories Mfg. Co., Detroit, Mich.,	1st Gallery 123
Duane, W. J., & Co., 1771 Broadway, New York,	1st Gallery 141
Rands Mfg. Co., Detroit, Mich.,	1st Gallery 152
Sprague Umbrella Co., Norwalk, O.,	1st Gallery 194
Troy Carriage Sunshade Co., Troy, O.,	2nd Gallery 258

American & British Manufacturing Company.—The chief item in the exhibit of this firm consists of the 1908 model 40-horsepower Herreshoff motors, which are of the same design as the 80-horsepower motor used in the racing motor boat *Den*. They also show a varied line of pressed steel frames and drop-forgings, the workmanship and materials being according to government specifications.

Gemmer Manufacturing Company.—Steering gears of improved pattern and known reliability constitute the showing of this concern, which has long been identified with the manufacture of this most essential part of the car. Their designs are characterized by simplicity, ease of adjustment, and the fact that they are not reversible by road shocks, which is an extremely important factor in their make-up.

Gray-Hawley Manufacturing Company.—Among the new things shown by this concern are the Autochime Junior and the Midget Autochime. The former is constructed exactly the same as the standard Autochime, except that it is shorter, measuring 2 by 9 inches, and its tone is slightly higher-pitched. It is also designed to be operated by air-pressure in connection with a newly-devised air-valve and produces a powerful blast. The combination Autochime and cutout is another new thing. A few changes have also been made in the 1908 models of the muffler.

Hartford Auto Parts Co.—The complete line of this concern is exhibited at the booth of the J. S. Bretz Co., who are New York sales agents for their product. They exhibit a full assortment of Hartford universals and Hartford complete drive sets, the joints ranging in size from those capable of transmitting 10 horsepower up to 100 horsepower.

Kinsey Manufacturing Company.—This firm shows a number of important components that enter into the building of an automobile, ranging in size from pressed steel frames down to force-feed oilers. Between these two extremes they show a line of special "Kinwood" radiators, pressed steel dashes, pressed steel hoods, mufflers, fenders, and the like, the construction of which is more or less familiar.

Standard Brake Company.—The showing of this concern consists of a most instructive exhibit illustrating the use of cork inserts in brakes, clutches, and other friction devices made by the National Brake & Clutch Company, Boston, Mass. The manner of their fitting, the advantages accruing from their use, and much other information of a similar nature is to be gleaned from the various parts shown.

Standard Welding Company.—Special types of detachable, dismountable, and mechanically fastened rims in a number of styles form a large part of the exhibit of this concern, together with a number of special shaped bands, flanges, and inverted rims for various purposes. A tubular automobile steering wheel is another novelty which is shown in various finishes, such as nickel, galvanized, copper-plated, and the like, while some of their standard line consists of auto hangers, brake pedals, control levers, connecting rods, cylin-

ders, gear-blanks, propeller shafts, pinion casings, steering wheels, knuckles and levers, steel frames, and truss rods.

Warner Gear Co.—Selective types of sliding change-speed gears, planetary gears, an improved type of steering gear, and a novelty in the shape of a selective side-control lever, which is also an emergency brake lever in addition, constitutes some of the things shown by the Warner Gear Co.

RADIATORS.

Briscoe Manufacturing Company.—Briscoe radiators form the "faces" of such a very large number of the most prominent American cars that visiting their exhibit is somewhat akin to meeting the shadows of old and familiar friends, as the most distinctive parts of many cars are shown here in the shape of duplicates of their radiators. It would be easy to catalogue quite a portion of the American industry from the numerous types of radiators shown here.

Whitlock Coil Pipe Co.—The automobile department of this concern has been considerably enlarged during the past year or two and now shows a number of different types of coolers, hoods, and motor manifold connections of a special class of construction and in a variety of designs. These consist of inlet manifolds of copper and brass, steel exhaust manifolds, and other specimens of bent pipe work.

TOPS.

Rands Manufacturing Company.—Tops for touring cars and roadsters, the Rand "Duquesne" style runabout top, folding windshields, enameled trunk racks, tire holders, rubber bow separators, drop-forged fork-brackets, and foot and coat rails are a few of the specialties of which this firm makes a comprehensive showing.

Sprague Umbrella Company.—In addition to a complete showing of one of the most complete lines of automobile tops to be seen on this market, and with which the name of Sprague has been synonymous ever since there has been such a thing as an auto top, this concern is exhibiting a novel folding plate-glass windshield which possesses a number of advantages over the majority of types at present in use. Instead of being hinged so as to fold, it works on the principle of the lazy jack and by a slight movement to the right after releasing it comes down in the same plane vertically as when upright. Tops, covers and canopies for every type of car are shown, together with their accessories.

Troy Carriage Sunshade Company.—One of the most novel and practical car shields or fronts to be found in the show is exhibited by this concern. It is not alone an attractive plate-glass front of approved type, but also combines a fine brass screen of the same size as the upper half of the front, which is very easily folded out of the way and the screen substituted in a very short time without leaving the driver's seat. There are many occasions when the upper half of the glass front cannot be used, but when some protection would be appreciated, and the screen fills rôle perfectly.

MAKERS AND IMPORTERS OF ANTI-FRICTION BEARINGS

American Ball Bearing Co., Cleveland, O., 1st Gallery 159
 Bretz Co., J. S., 1004 Times Bldg., New York, 2nd Gallery 355
 Hess Bright Mfg. Co., 19th street, Philadelphia, Pa., 1st Gallery 173

Hyatt Roller Bearing Co., Newark, N. J., 1st Gallery 116
 Standard Roller Bearing Co., Philadelphia, Pa., 1st Gallery 200
 Timken Roller Bearing & Axle Co., Canton, O., 1st Gallery 118

American Ball Bearing Company.—Complete front and rear axles of the ball-bearing type are a specialty of this concern which they show in a number of sizes. These components are completely finished and all ready to install on the car. They are made to makers' specifications, and as they have achieved a reputation for efficiency and durability are largely used.

Bretz Co., J. S.—The exhibit of the Hartford Auto Parts Company, Hartford, Conn., is in charge of this concern, who are New York sales agents for its entire line. They also show the F. & S. annular ball-bearings, of which they are the sole American representatives, and the U. & H. magnetos, which are made by Unterberg & Helmle, Karlsruhe, Germany, and are now being imported for the first time. The latter are designed along standard lines and also incorporate some special features, such as a positive starting device.

Hess-Bright Manufacturing Company.—A full line of the "H B" or "D W F" annular ball-bearings are shown by this concern, the latter designation being that of the German factory. One of the most interesting features of their exhibit consists of two railway axles which have been taken from a standard passenger coach after the latter had run 65,000 miles. These bearings are absolutely without apparent wear or other deterioration of any kind and serve to demonstrate in a striking manner of what properly made ball-bearings are capable under the most severe service conditions. In addition to the show spaces, parlors have been reserved in a nearby hotel, where the heads of the Hess-Bright Company will be pleased to receive visitors and where suitable freedom from interruption not obtainable at the show can be had to talk business.

Hyatt Roller Bearing Company.—Hyatt flexible roller

bearings are a standard part of the equipment of many American cars and their use during the past several years has more than sufficed to make their details of construction, as well as their numerous merits, familiar to the average autoist, so that the queer-looking spirals shown at their exhibit are nothing strange.

Standard Roller Bearing Company.—The new and improved Grant roller bearing is the chief thing dwelt upon by this concern in its exhibit. The Grant is said to be the first and original conical roller bearing devised and has given universal satisfaction in service. In the new model for auto work the rollers are made solid and reduced at the ends to form shafts or pins. They are made in all the standard sizes.

Timken Roller Bearing Axle Company.—This is a combined exhibit of parts for both pleasure and commercial vehicles, the components in the former category being a No. 8 floating clutch with 12-inch brake drum fitted with double brakes, and designed to transmit 25-horsepower; a No. 6 clutch of similar type, but fitted with internal and external brakes designed for cars weighing up to 2,800 pounds and to transmit up to 45 horsepower through the differential; also a No. 5, fixed hub type, equipped with 12-inch internal single brakes and 14-inch external double brakes. In place of a differential, this last axle is fitted with the Hedgeland Equalizer. All the foregoing are rear-axle units. In front axles, two of the I-beam drop-forged type are shown and one of the straight, plain type of tubular front axles, equipped with the regular type of Elliott knuckles and one-piece forged spindles. An even more complete showing of both front and rear axles for commercial vehicles is made, some of them being of extremely heavy types. In addition to this samples illustrating the entire range of Timken roller bearings from the smallest to the largest is shown.

CHAINS, CLUTCHES, AND TRANSMISSION APPLIANCES

Baldwin Chain & Mfg. Co., Worcester, Mass., 1st Gallery 161
 Brown-Lipe Gear Co., Syracuse, N. Y., 1st Gallery 107
 Diamond Chain & Mfg. Co., Indianapolis, Ind., 1st Gallery 191
 Gemmer Mfg. Co., Detroit, Mich., 1st Gallery 193

Merchant & Evans Co., 517 Arch street, Philadelphia. 2nd Gallery 357
 Warner Gear Co., Muncie, Ind., 1st Gallery 178
 Whitney Mfg. Co., Hartford, Conn., 1st Gallery 105

Baldwin Chain & Manufacturing Company.—Chains of all sizes, particularly for automobile use, and sprockets for the same purpose, are the chief items in the exhibit of this concern, which is mainly of interest to the auto dealer and designer.

Brown-Lipe Gear Co.—Transmission, steering and differential gears constitute the products of this concern, and they exhibit their complete line.

Diamond Chain & Manufacturing Company.—Diamond chains are known wherever a chain-drive automobile is made or used, and as they are the result of many years' experience in chain-making, dating back to the time when even bicycle chains were extremely crude things, the claim of the makers that "Diamond chains drive their cars more miles per dollar cost than any others" needs no substantiation. They are made in sizes ranging from some as fine as watch chains up to those capable of transmitting high powers.

Merchant & Evans Company.—This concern, with its wide-spreading business relations and large branches in all the more important cities of the country, is one of the best-known establishments in the metals line in the United States, its name being a byword with engineers and manufacturers. Within the past few years it has gradually become more and more interested in the automobile industry, until now a well-established department devoted to this end forms part of the business. Powell Evans,

president of the company, and most active, has just returned from his third trip abroad in the interests of this department, and in this connection the firm makes the important announcement that it has successfully concluded negotiations for the purchase of the patent rights covering the Hele-Shaw multiple-disk clutch in the United States. Mr. Evans has considerably improved the design of the clutch before putting it on the American market by substituting light steel stampings for the case and other parts which are needlessly heavy in the British original. A housed central spring now controls the pressure with a very simple, positive and easily adjusted regulation, the improved design greatly decreasing the cost of the complete clutch. The company will shortly install a large new plant of heavy presses for its manufacture in property recently acquired near Pittsburgh, and the manufacture of the clutch and other parts will be undertaken on a large scale. Other specialties are a change-speed gear and a complete rear axle unit of special construction, which is the result of more than two years' constant study on Mr. Evans' part to overcome the defects of existing types.

Whitney Manufacturing Company.—Whitney chains in all sizes and the Woodruff patent system of keying, which is largely used in the construction of automobiles, form the subject of this firm's exhibit. Many of their types of chains are made under their own patents and are largely specified for auto use by American makers.

CARBURETERS: THE LUNGS OF THE MOTOR

Auto Improvement Co., 316 Hudson St., New York, 1st Gallery 138
 Breeze Carbureter Co., Newark, N. J., 1st Gallery 183
 Byrne-Kingston & Co., Kokomo, Ind., 1st Gallery 171

Hill Mfg. Co., 27 Fuller street, Buffalo, N. Y., 2nd Gallery 338
 Turner Brass Works, Sycamore, Ill., 1st Gallery 133
 Wheeler & Schebler Co., Indianapolis, Ind., 1st Gallery 174

Breeze Carbureter Company.—This firm exhibits a special type of carbureter that they have been manufacturing for several years past and which represents considerable study of the problems of carburetion during that time, so that its design and construction are of interest to the autoist.

Byrne, Kingston & Co.—Carbureters are the chief specialties shown by this concern, but the Kingston carbureter is almost too well known to call for any detailed description, as it is specified as a part of the regular equipment of so many prominent American cars that this would be unnecessary. It is made in a range of sizes to fit cars of any power, from the smallest to the largest, and numerous types are shown adapted to well-known cars and on which it can be placed without any special fitting. They also show a line of the Kingston mufflers in both automobile and marine types.

Turner Brass Works.—The Turner carbureter, which is shown in four sizes, is but one of the many specialties shown by this firm, a comprehensive showing of which is made. They also show the Martin multiple-feed lubricator and the Martin gasoline strainer.

Wheeler & Schebler.—Schebler carbureters are so well-known through their use on such a very large number of cars staged at the show that it is easy to see more of them on the main floor than it is in the gallery space where they are exhibited. "Schebler" is a frequent answer returned to the query concerning the carbureter fitted to a car, and it would seem to have reached a point where it is almost as staple a fitting on the American car as iron is for cylinders or aluminum for crankcases. The 1908 model forms the subject of the exhibit, but a description would be superfluous.

HAND TOOLS, JACKS, ETC.

Coes Wrench Co., Worcester, Mass., 1st Gallery 135
 Oliver Mfg. Co., 213 S. Desplaines St., Chicago, Ill., 1st Gallery 172
 Noonan Tool & Machine Works, Rome, N. Y., 2nd Gallery 305
 Patterson, Gottfried & Hunter, Ltd., 146 Centre St., New York, 2nd Gallery 346

Coes Wrench Co.—As the originators of the anomalously-named monkey-wrench, and manufacturers of this useful tool for the past seventy-two years, the exhibit of the Coes Wrench Company, is one that serves to show the extremely wide range in which such an apparently simple device can be made, as this firm makes wrenches ranging in weight from four ounces up to 162 pounds, the sizes varying from four to seventy-two inches. For some time past they have been devoting attention to a special type of automobile wrench designed for service in inaccessible places and for durability, as the tool is entirely of steel.

Oliver Mfg. Company.—Oliver jacks are known wherever it is necessary to raise an automobile, so that it is hardly necessary to describe them for the benefit of the average autoist to whom they are already familiar.

Noonan Tool & Machine Works.—Tools and specialties for the quick repair of automobiles, motorcycles, and bicycles are manufactured by this concern, which lists more than two dozen handy labor and time-saving devices.

Patterson, Gottfried & Hunter, Ltd.—This firm has long made a specialty of automobile tool kits in roll form and the line they present is one of the most complete of its kind on the market.

COMPRESSED ACETYLENE GAS TANKS.

Prest-O-Lite Co., 1904 Broadway, New York, 1st Gallery 155

Prest-O-Lite Co.—Prest-O-Lite has become a by-word with the automobilist, so much so that it is practically synonymous with compressed acetylene gas tanks. One means the other, so that it is hardly necessary to explain this fact even to the beginner at automobiling or the new visitor—the man who is seeing his first automobile show, as the polished copper-plated steel tanks which were once such a subject for curious questions are now so common a sight fastened to the side of a car or on the running board that few realize their presence. Prest-O-Lite gas tanks have made themselves indispensable to the autoist, and the same is true of the Prest-O-Tire tanks, which eliminate the annoyance of pumping up large, heavy tires. According to the makers, there are now 35,000 users of Prest-O-Lite and Prest-O-Tire tanks.

TANKS AND FUEL SUPPLY SYSTEMS.

Bowser & Co., Inc., S. F., Fort Wayne, Ind., 1st Gallery 126

Bowser & Co., S. F., Inc.—This firm has simplified the autoist's problem of complying with the fire underwriters' rules regarding the handling of gasoline to such an extent that it is now only necessary to specify one of the Bowser "long distance" outfits of the required capacity in order to be certain, not alone of fulfilling every demand of the insurance companies for the protection of the property, but also to procure as convenient and economical a method of fuel-handling as has ever been devised. Outfits adapted to the capacity of the smallest private garages as well as the largest public establishments are made by this concern, and many of the most prominent garages in the metropolitan district have had the Bowser system installed for some time past, so that the autoist who is contemplating the purchase of such an outfit can readily see it in actual operation as well as the show, with but little additional trouble. One of the new things they are showing is a portable wheel-tank for oils.

AUTOMOBILE AND MARINE MOTORS.

Brownell-Trebert Co., Rochester, N. Y., 2nd Gallery 316

Brownell-Trebert Co.—Automobile and marine motors constitute the product of this concern, the latest models of which are shown in their exhibit. They manufacture standard four-cylinder, water-cooled motors of the four-cycle type, embodying numerous improvements of design and construction that are exclusive. The design is of the valves-in-the-head type, actuated by rocker arms working on a single camshaft, the cylinders being cast in pairs. The timer is mounted on a vertical standard forward, with the carbureter and valve mechanism all on the right-hand side. Lubrication is automatic and of the self-contained type. These motors are made in 4, 6, or 8 cylinders and from 15 to 160 horsepower.

AUTOMOBILE BODIES.

Quinby & Co., J. M., Newark, N. J., Main Floor 42

Quinby & Co., J. M.—Apparently this firm's exhibit is one of complete cars rather than bodies, of which they have made a specialty for a number of years past. Instead of being shown separately, the bodies are mounted on the chassis for which they were designed, and the car is offered for sale as it stands, or orders are taken for duplicates of any of the bodies shown, or according to the purchaser's specifications.

MISCELLANEOUS EXHIBITS AT PALACE SHOW

Acetevone Co., Niagara Falls, N. Y.,	1st Gallery 147	Masury & Sons, John, Brooklyn, N. Y.,	2nd Gallery 371
Auto Spring Repairer Co., 54 Maiden Lane, New York,	2nd Gallery 375	National Surety Co., 115 Broadway, New York,	Main Floor 57
Auto Pump Co., Springfield, N. Y.,	1st Gallery 168	N. Y. School of Automobile Engineers, 146 West 56th	
Automobile Utilities Co., Boston, Mass.,	2nd Gallery 364	street, New York,	2nd Gallery 311
Balzer, Gus, 1556 Broadway, New York,	2nd Gallery 326	Norris Auto Co., Saginaw, Mich.,	2nd Gallery 363
Bureau of Tours, A. C. A., New York,	2nd Gallery 376	Norton Co., 26 Cortlandt street, New York,	2nd Gallery 343
Clover Mfg. Co., 226 West 58th street, New York,	2nd Gallery 361	Pacific Iron Works, Bridgeport, Conn.,	2nd Gallery 326
Columbia Nut & Bolt Co., Bridgeport, Conn.,	1st Gallery 169	Pantasote Co., 11 Broadway, New York,	1st Gallery 142
Comptoir d'Innovations Pour Autos, Paris, France,	2nd Gallery 351	Perfection Spring Co., Cleveland, O.,	2nd Gallery 349
Consolidated Optical Co., 112 W. 31st St., New York,	2nd Gallery 365	Prosser & Son, Thomas, 15 Gold street, New York,	2nd Gallery 308
Cowles & Co., C., New Haven, Conn.,	1st Gallery	Raimes Co., 50 Ferry street, New York,	2nd Gallery 366
Daniels, W. Smalley, 52 Church St., Boston, Mass.,	2nd Gallery 317	Spicer Universal Joint Co., Plainfield, N. J.,	1st Gallery 197
Downing, C. J., 54 Warren street, New York,	2nd Gallery 301	Springfield Portable Construction Co., Springfield,	
Demar, J. E., 244 West 49th street, New York,	2nd Gallery 332	Mass.,	2nd Gallery 377
Elite Mfg. Co., Ashland, Iowa,	2nd Gallery 306	Stolt, Oscar S., New York,	1st Gallery 127
King, Julius, Optical Co., 48 Maiden Lane, New York,	2nd Gallery 336	Travelers' Insurance Co., Hartford, Conn.,	Main Floor 53
Klauder, Charles E., Philadelphia, Pa.,	2nd Gallery 313	Ventilated Cushion & Spring Co., Jackson, Mich.,	2nd Gallery 309
Krause, Richard E., Cleveland, O.,	2nd Gallery 350	West Side Y. M. C. A. Auto School, 318 West 57th	
Mann Co., Leon, 699 Broadway, New York,	2nd Gallery 353	street, New York,	2nd Gallery 362

Auto Pump Company.—This well-known concern manufactures the Spencer power air pump, which is a simple device that can be carried in the tool box when not in use and instantly applied to the engine when it is necessary to inflate any of the tires. The operation is very simple.

Balzer, Gus.—The marks that make the car distinctive both in the eye of the law, and of its owner, are specialized by this manufacturer, who makes a specialty of a line of attractive monograms, as well as license pads, numbers, and other marks of identification. They are made in a variety of styles.

Cowles & Company, C.—This firm exhibits a comprehensive line of high-grade carriage fittings, one of the novelties specialized being an ingenious locking handle for limousines, landaulets and broughams and which can also be used on touring cars. It is termed the security locking handle, each pair being fitted with locks that can only be opened by the keys accompanying them, as each pair is made with a different combination locking key, similar to a postoffice box key. This concern has also recently perfected a window lock and anti-rattler which is a valuable adjunct.

Masury & Sons, John.—The name of this concern is synonymous with that of fine carriage varnishes of which they have been manufacturers for a great many years before the automobile became a factor.

Pantasote Company.—Upholstery material forms the subject of this firm's exhibit, and the variety of shades and styles in which it is manufactured are little short of amazing. Almost any desired effect can be produced and any shade matched to contrast or correspond with the remainder of the car's finish.

Raimes & Company.—"Globe" liquid and paste metal polish constitutes the line exhibited by this concern. It is

suitable for nickel, silver, copper and brass, and is used both for cleaning and polishing.

Spicer Universal Joint Company.—As its name indicates, this firm manufactures a line of universals now so generally employed on shaft-driven cars, which form a large majority of all those in use at present. These joints are of a special type, of which this concern is the originator and maker.

Springfield Portable Construction Company.—Building material has reached such a high-water level that in many cases it is now far cheaper to buy buildings of the portable type, all ready to set up, than it is to have them erected under local contract. This applies particularly to private garages, which the above-named firm makes a specialty of supplying.

DISTANCE RECORD FOR COLUMBUS ELECTRIC.

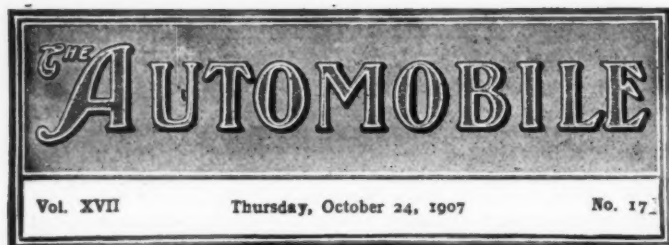
BOSTON, Oct. 21.—An excellent mileage record has been accomplished for an electric automobile by a run of 100 1-8 miles, made by Charles S. Henshaw with a Columbus stanhope, equipped absolutely according to stock specifications. Starting from Boston, the little car ran out to Gloucester and return, a distance of 74.7 miles, without any trouble. Roads were of a give-and-take nature, macadam predominating, but cobblestones showing their uneven surface from time to time, and a few hills relieving the trip of monotony. On the return to the city the car was in such good condition that Henshaw decided to try for the long distance record, and for one hour ran on the square formed by Arlington, Beacon, and Boylston streets and Massachusetts avenue, at an average of ten miles an hour, until 101 1-8 miles were recorded.

At this stage the batteries showed signs of exhaustion, and although it was still possible to run at seven miles an hour the test was called off. During the country run an average of ten miles an hour was maintained, as is testified by the judges' car.

TWO MAKES WHICH ARE HAVING THEIR OWN SHOWS

Berliet.—The American Locomotive Motor Car (license Berliet) is holding forth independently of either the "independents" or the licensed show, and instead of tenantry a niche at either the Palace or the Garden it will reign supreme in a jurisdiction all its own during the period of both shows, including the interim between them. It will be exhibited at the Waldorf-Astoria and will be represented by one of the new six-cylinder chassis, a complete 40-horsepower four-cylinder touring car, and a 40-horsepower roadster on the same chassis as the last named. These three will have everything to themselves at the huge Fifth-avenue hostelry and will be a miniature automobile show of their own. The remaining models will be shown at No. 1886 Broadway.

Rambler.—"Two automobile shows are to be held in New York for the display of 1908 models. These are under the control of contesting organizations with neither of which we are affiliated. Therefore, though many strong friends of the Rambler may attend either or both, it has been thought better that the Ramblers be exhibited independently throughout the period of both than at either of the partisan shows." Thus runs the Rambler announcement made by Thomas B. Jeffery & Company regarding its stand on show matters this year. This exhibit will be held during the period of both shows, October 24 to November 9, at the salesrooms of Homan & Schulz, 38-40 West Sixty-second street, and includes a full line of stock models and finely finished chassis.



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Now for the Innings of the Annual Shows.

It is one of the penalties of a new industry that at regular intervals of twelve months every person connected with it must have his ordinary routine scattered to the winds. When selling automobiles becomes commonplace, there will be little need for yearly upheavals. Since we are obliged to take things as they are and not as the superior man's superior wisdom would have them be, the person who has for his mission the converting of the classes and the masses from patriarchal methods of locomotion to modern means of propulsion is wise who enters into the movement with whole-hearted energy.

Probably individual firms could sell as many cars for spot cash by holding special exhibitions in their own showrooms and entering into a special publicity campaign as by participating in a show; but the final result to the industry as a whole would be quite different. Shows have another object than transferring automobiles from the hands of the manufacturer to those of the user for spot cash, and that object is an appeal to the people which can only be made by a united, and, to a certain extent, disinterested effort. The super-technical man has too frequently made it known that he does not like the modern spectacular show, and that a plain chassis and plain boards would be more satisfactory.

Directors of the big national shows, however, display true wisdom in making their appeal to the large majority indifferent to

the automobile industry. A trading store display pure and simple is never likely to stir up the emotions of the uninitiated. The efforts in Grand Central Palace and Madison Square, at Chicago and a few other of the important cities of the country, will strike the imagination of the masses as nothing else can, and it is in that power to excite interest that their chief value lies. When the automobile industry becomes a commonplace one there will be no need for shows—for there will be no converts to make.



A Comparison of Risks in Auto and Horse Travel.

It must be admitted by even the most ardent automobile user that accidents with the new conveyance are frequent enough to be deplorable, and there is little question but with systems of more strictly examining into operators' qualifications the number of fatalities might be lessened materially. The same, of course, is true of horse use—to an extent that might surprise the prejudiced advocates of this more dangerous method of locomotion—but as long as the race endures it undoubtedly must continue to be the case that moving about from place to place, by whatever means, will subject the individual to certain hazards he might avoid by resolutely remaining in the home of his birth. A disproportionate popular conception of the automobile accident matter has been rather deliberately fostered by many daily newspapers, which play up in front-page display the mishap occasioned by the machine, while relegating to a few obscure lines the fatality consequent upon a misdirection of horse sense. Yet it seems to be the fact, insofar as statistics on the subject are available, that the horse is responsible for the greater proportion of accidents—even taking into account the present predominance of the horse vehicle.

One has only to look into the records of the coroner's office in any community to find long lists of deaths, resulting year after year from the use—often by women and children—of an animal which is prone to spasms of terror every time a bit of paper blows across the road, or a locomotive, bicycle, or automobile intrudes on the equine vision. Even admitting the present probability that there are twenty horse vehicles to one automobile (the most reliable recent figures indicating about 3,000,000 of the former to 150,000 of the latter) it still would require far less than twenty horse accidents to one automobile accident to place the two means of transportation on a parity as respects safety. And careful estimates disclose something like sixty horse accidents to one automobile accident. The essential unfairness, however, of balancing one horse vehicle against one automobile is found in the greater average mileage and carrying capacity of the latter.

In any sort of ordinary circumstances, an automobile is called upon to carry twice the load five times the distance that would be expected from a horse vehicle. This being the case, is it reasonable to expect the greater travel with the lesser risk? Certainly the liability of individual accident is more likely to bear a proportion to the number of individuals carried and the mileage accomplished than it is to any arbitrary comparison of vehicle numbers. Railroad statisticians recognize and are familiar with a basic unit they term a "passenger mile." Borrowing this, an automobile conveying seven people two hundred miles would afford 1,400 passenger miles against, say, a horse vehicle carrying two people twenty-five miles, affording 50 passenger miles. Surely it is natural that the hazard of one amount of travel should be greater than of one-twenty-eighth as much.

So, if the automobile increases travel, can we expect this to be the case without some accompanying increase in the accidents of travel? Apparently not, if we frankly face the figures. Yet an analysis of these same figures makes it plainly appear that the automobile, while vastly increasing the total of passenger miles, with a related increase in accidents, nevertheless most materially decreases the risk per passenger mile. This, too, is with the conditions as they are—admittedly not all that they should be. With better roads, saner legislation, and increased caution and competence on the part of all road users, much of the risk that is now present will disappear.

A. L. A. M. LONG ISLAND PRESS RUN.

The Show Committee of the A. L. A. M. did the job thoroughly on Monday last, conveying several score of press representatives from New York City to the famous Chateau des Beaux Arts, most picturesquely located at Huntington, L. I., where the party arrived with keen appetites for the roast pig luncheon. Incidentally there was some tall traveling in the 1908 six-cylinder and four-cylinder models utilized for the occasion, the field embracing the Pierce (six), Stevens (six), Peerless (six), Packard, Thomas, Lozier, Locomobile, Columbia, White, Studebaker, Autocar, Mathe-son, Pope-Hartford, Pope-Toledo, Thomas (Detroit), Northern, and Knox, with several interlopers.



COLONEL GEORGE POPE,
Chairman of the A. L. A. M.
Show Committee.

There were only two speechmakers, and both of them were good. Col. George Pope, chairman of the A. L. A. M. Show Committee, in addition to a "distributed" speech given below, made timely comments upon the industry in general, the tenor of which was substantially optimistic. Then John C. Wetmore, automobile editor of the *Evening Mail* and the dean of the automobile writers of the metropolitan district, contributed one of

his facetious and versatile talks which put everybody in excellent humor, with a single exception.

The run back to town was done more or less leisurely and the beauties of the Autumn tinted Long Island roads were more thoroughly appreciated than was the case in the somewhat hurried outward journey. The ease with which the 75-mile trip was accomplished illustrated the reliability of the Seldenite array of up-to-date cars.

Besides Col. Pope, Marcus I. Brock and Secretary M. L. Downs were other members of the Show Committee who contributed to the pleasure of the guests. The press department trio, consisting of Harry T. Clinton, Arthur N. Jervis and Henry Caldwell, accepted the occasion as one for pleasure and not for "working" purposes. Charles W. Schroeder represented the Madison Square Garden Company. E. H. Cutler, general manager of the A. L. A. M., was also quietly in evidence.

Among other things which Col. Pope said in his prepared speech were the following:

These 1908 models, which we have had the good fortune to see practically tried out this early, are undoubtedly the finest products in the line of cars yet seen, and they are destined to sell readily.

The business done by the licensed makers during the first six months of 1907 was nearly as great as during the whole of 1906. The sales of the 1907 half-year amounted to \$40,000,000, while for the whole of 1906 they were only \$45,000,000. The sales of the first nine months of 1907 have surpassed the total of 1906 by more than \$5,000,000, and the total business of this year will exceed that of last year by at least \$15,000,000. This is to say that the total business done this year by the licensed makers will show a gain of at least 33 1-3 per cent. over 1906.

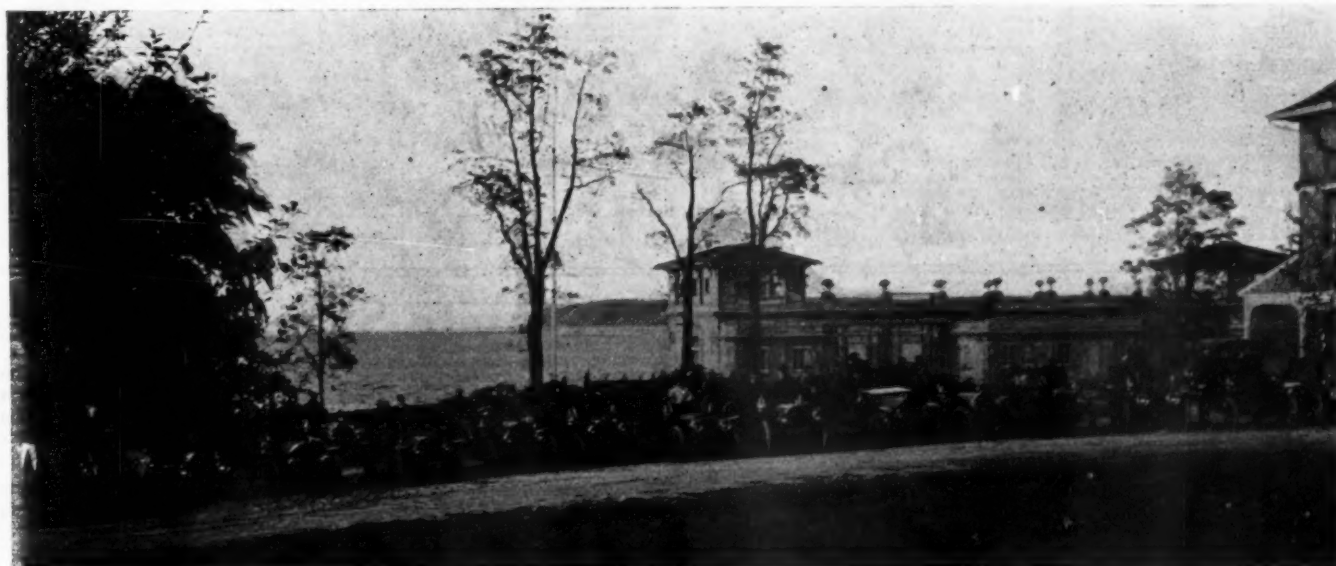
The figures justify an optimistic outlook for 1908, as does also the quality of the cars themselves. The American car has rapidly attained the excellence of the foreign product; and it has even demonstrated itself superior for the roads of this country. The industry has withstood the trials of unfavorable weather and the blows of a panicky stock market, and is still in good condition as a whole. Every circumstance warrants confidence in a prosperous future for the conservative maker and dealer.

CHRISTIE FRONT-DRIVE LOWERS ITS RECORD.

BIRMINGHAM, ALA., Oct. 18.—On the State Fair Grounds here, Walter Christie's 135-horsepower front-drive automobile has lowered its own record for the mile on a circular track to 51 3-5. Louis Strang, who was Christie's mechanic on the same machine in the French Grand Prix last July, handled the car, Christie being unable to drive owing to his injuries at Pittsburg last month. Barney Oldfield, who for a long time held the mile record with Christie, has now been left behind, the best time of the Green Dragon driver being 3 seconds. Owing to the meet being an unsanctioned one, there is some possibility of Strang's record not being accepted as official by the Racing Board of the A. A. A.

KULICK'S NARROW ESCAPE FROM DEATH.

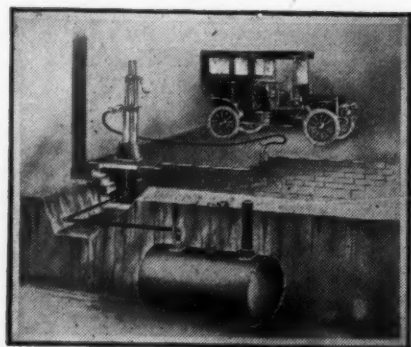
DETROIT, MICH., Oct. 21.—Striving for a new one-mile record on a circular track, Frank Kulick crashed through the fence at the State Fair Grounds, converted the new 120-horsepower Ford racing machine into a pile of junk, and narrowly escaped death, landing in the hospital with injuries that will put him on the retired list for some months. Kulick had been trying for some time to clip a few seconds off Strang's mark of 51 3-5 with the Christie front-drive, and succeeded in reeling off a mile in 49 4-5 at a private trial. The accident happened in rounding a turn, the car crashing through the fence and executing a couple of complete somersaults. The front axle broke loose and went spinning off to one side. Kulick was picked up fully sixty feet from where he started his flight through the air, and hurried to a hospital, where it was found that his right leg was broken in two places. After the accident Henry Ford said he was through with racing.



THE SIX AND FOUR-CYLINDER A. L. A. M. LINE-UP AT THE CHATEAU DES BEAUX ARTS, HUNTINGTON, LONG ISLAND.

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